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Battle Mountain NV063-EA06-129

Ely NV-040-2005-21

Winnemucca NV-020-06-EA-13

Plate Boundary Observatory Global Positioning System Network Installation and Maintenance in Nevada

Location: ***Nevada Statewide***

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Chapter 1: PURPOSE AND NEED

1.1 Introduction

The University NAVSTAR Consortium Inc. (UNAVCO) is applying for authorization to construct and operate its Plate Boundary Observatory (PBO) Project on land administered by the U.S. Department of the Interior (USDI), Bureau of Land Management (BLM) in Nevada. This Environmental Assessment (EA) was prepared by a third-party consultant under the direction of the BLM pursuant to the National Environmental Policy Act of 1969 (NEPA), the Council on Environmental Quality (CEQ) regulations implementing NEPA (40 CFR 1500–1508), and all other associated regulations. This EA is intended to be a concise public document that analyzes the probable and known impacts to the environment from UNAVCO's Proposed Action and No-Action Alternative and reports on the consequences of the expected impacts.

This chapter provides a description of the proposed project; the purpose of and need for the Proposed Action; the purpose and scope of this EA; and actions required to authorize the proposed project.

1.2 Project Background

EarthScope is a broad scientific undertaking to apply modern observational, analytical, and telecommunications technologies to investigate the structure and evolution of the North American continent and the physical processes that control earthquakes and volcanic eruptions. EarthScope is a partnership that includes more than 100 universities, the National Science Foundation (NSF), U.S. Geological Survey, National Aeronautics and Space Administration, Department of Energy, regional seismic networks, and state geological surveys. The program is being developed with funding provided by the NSF. Designing and building the physical infrastructure is the responsibility of UNAVCO through the PBO Project.

The PBO Project is a collaborative effort between UNAVCO and numerous research universities and government agencies to increase the density and reliability of their geophysical monitoring network. By joining together to meet their scientific demands, the research entities might cause fewer environmental impacts and incur lower costs than if each entity developed an individual network. The goal of the PBO Project is to provide the participating research entities with a multipurpose geophysical monitoring

network consisting of about 1,000 Continuous Global Positioning System (CGPS) receivers in the continental western United States and Alaska.

PBO operates as a program under UNAVCO, Inc., a non-profit membership-governed organization that supports research applications of high-precision geodetic techniques such as the CGPS technology.

1.3 Project Description

The PBO Project is a distributed observatory of high-precision geodetic instruments designed to monitor the ongoing deformation of western North America. The geodetic network would extend from the Pacific coast to the eastern edge of the Rocky Mountains and from Mexico to Alaska and would include about 1,000 CGPS receivers.

The PBO network would consist of four major elements. First, a backbone network of 100 new and 20 existing CGPS receivers would provide a long-wavelength, long-period synoptic view of the entire plate boundary zone. The backbone would cover the western United States and Alaska at a receiver spacing of about 200 kilometers (km) (124 miles [mi]). The second element consists of focused dense clusters of 775 permanent additional CGPS receivers along fault zones and magmatic centers in the western United States and Alaska (Figure 1-1). Instrument spacing will be 5–10 km (3–6 mi). The third PBO element includes a pool of 100 portable CGPS receivers for temporary deployments and rapid response. These instruments are used for densifying areas that are not sufficiently covered by CGPS and for responding to volcanic and tectonic crises. The fourth element, called Geo-PBO, includes the establishment of a national center for the storage and retrieval of digital imagery and housing of geochronology facilities to support geologic and paleoseismic studies in the PBO.

1.3.1 Nevada Network Description

In Nevada, 44 new PBO stations are planned for installation (Figure 1-2). Of the 44 stations proposed, 36 are proposed for installation on BLM-administered lands. The distribution of the PBO stations across BLM Districts is listed in Table 1-1 and illustrated in Figure 1-3. Table 1-2 and Figures 1-4 through Figure 1-8 provide additional information on the proposed sites by Field Office. Installation of the Nevada network would occur over a three-year period. Construction began in 2004 on private lands in Nevada.

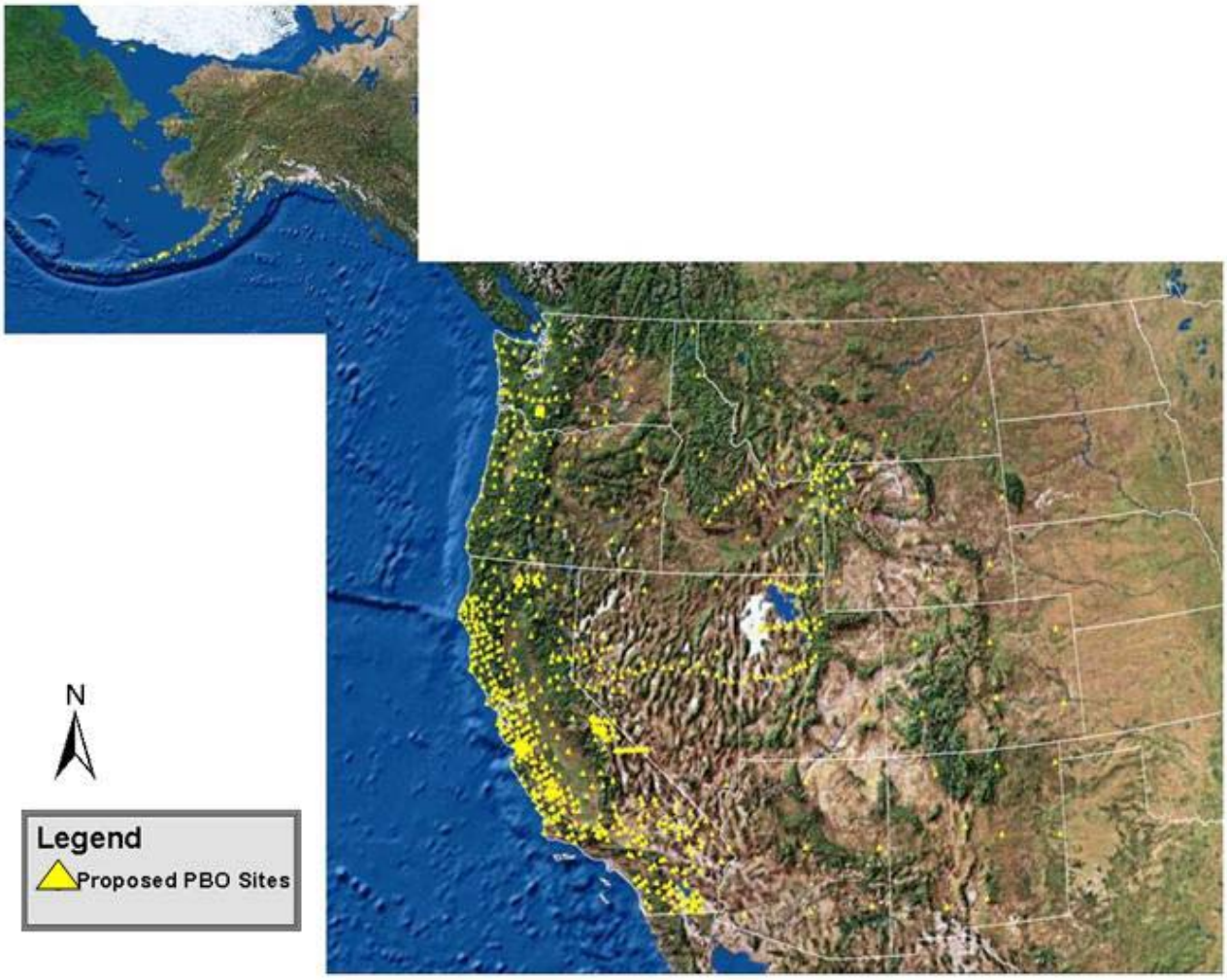

Figure 1-1. PBO Stations Proposed for the Western United States and Alaska

Table 1-1 Number of PBO Stations Proposed by BLM Field Office

BLM Field Office	Number of PBO Stations
Battle Mountain	6
Carson City	13*
Elko	2
Ely	7
Winnemucca	7
Total proposed BLM sites	36

* There is an additional data relay site proposed on Carson City Field Office land; this site is included in the total number of proposed BLM sites.

Table 1-2 PBO Station Type and Location

Site Number	Site Name	BLM Field Office	County	Monument Type	Fence Proposed? (Yes/No)	Legal Description
P002	Austin	Battle Mtn	Lander	DDBM	Yes	19N,43E,Section7
P069	Campbell Creek	Battle Mtn	Lander	DDBM	Yes	17N,39E,Section33
P071	Railroad Pass	Battle Mtn	Lander	DDBM	Yes	17N,41E,Section7
P073	Twin Spring Hills	Battle Mtn	Eureka	DDBM	Yes	19N,49E,Section26
P074	Devon Peak	Battle Mtn	Eureka	DDBM	Yes	20N,53E,Section31
P085	Slaven Canyon	Battle Mtn	Lander	DDBM	Yes	30N,46E,Section6
P068	Middlegate Hill	Carson City	Churchill	DDBM	Yes	17N,35E,Section25
P090	Estates Rd	Carson City	Washoe	DDBM	Yes	20N,19E,Section2
P099	Fairview South	Carson City	Churchill	SDBM	Yes	16N,34E,Section33
P128	Bango Mountain	Carson City	Churchill	DDBM	Yes	19N,26E,Section28
P129	Dead Cow Hill	Carson City	Churchill	DDBM	Yes	15N,31.5E,Section23
P130	Camel Hump	Carson City	Churchill	DDBM	Yes	16N,27E,Section10
P131	La Plata	Carson City	Churchill	DDBM	Yes	18N,32E,Section2
P132	Paradise	Carson City	Mineral	DDBM	Yes	10N,36E,Section18
P133	Buckley Point	Carson City	Mineral	DDBM	Yes	10N,32E,Section18
P134	Miners Ridge	Carson City	Mineral	SDBM	Yes	13N,27E,Section23
P135	Cambridge South	Carson City	Lyon	DDBM	Yes	10N,27E,Section30
P135R	Bald Mtn. Repeater	Carson City	Mineral	Repeater	Yes	11N,28E,Section27
P136	S. Camp Canyon	Carson City	Douglas	SDBM	Yes	10N,23E,Section6
P139	Paiute Canyon	Carson City	Washoe	SDBM	Yes	24N,20E,Section34
P007	Salmon Falls Creek	Elko	Elko	DDBM	Yes	44N,63E,Section2
P087R	Cortez Repeater	Elko	Eureka	SSDM	No	29N,50E,Section24
P005	Wild Horse Point	Ely	White Pine	SDBM	Yes	24N,59E,Section36

Site Number	Site Name	BLM Field Office	County	Monument Type	Fence Proposed? (Yes/No)	Legal Description
P075	Pinto Summit SW	Ely	White Pine	DDBM	Yes	17N,54E,Section3
P076	Dry Mountain	Ely	White Pine	DDBM	Yes	19N,57E,Section12
P077	Raven Loft	Ely	White Pine	SDBM	Yes	18N,58E,Section34
P079	Wagner Flat	Ely	White Pine	DDBM	Yes	15N,64E,Section11
P080	Willow Patch Spring	Ely	White Pine	DDBM	Yes	15N,69E,Section31
P102	Little Bald Mtn	Ely	White Pine	DDBM	Yes	24N,57E,Section28
P013	Spring Creek	Winnemucca	Humboldt	DDBM	Yes	41N,41E,Section15
P098	West Humboldt Range	Winnemucca	Churchill	DDBM	Yes	23N,29E,Section2
P078	Lone Pine Canyon	Winnemucca	Pershing	DDBM	Yes	30N,36E,Section36
P083	Tobin Range	Winnemucca	Pershing	DDBM	Yes	28N,40E,Section10
P096	Little Valley	Winnemucca	Washoe	DDBM	Yes	22N,24E,Section23
P097	Hot Springs Mtns.	Winnemucca	Churchill	DDBM	Yes	23N,28E,Section30
P138	Sahwave Mtns.	Winnemucca	Pershing	DDBM	Yes	27N,26E,Section1

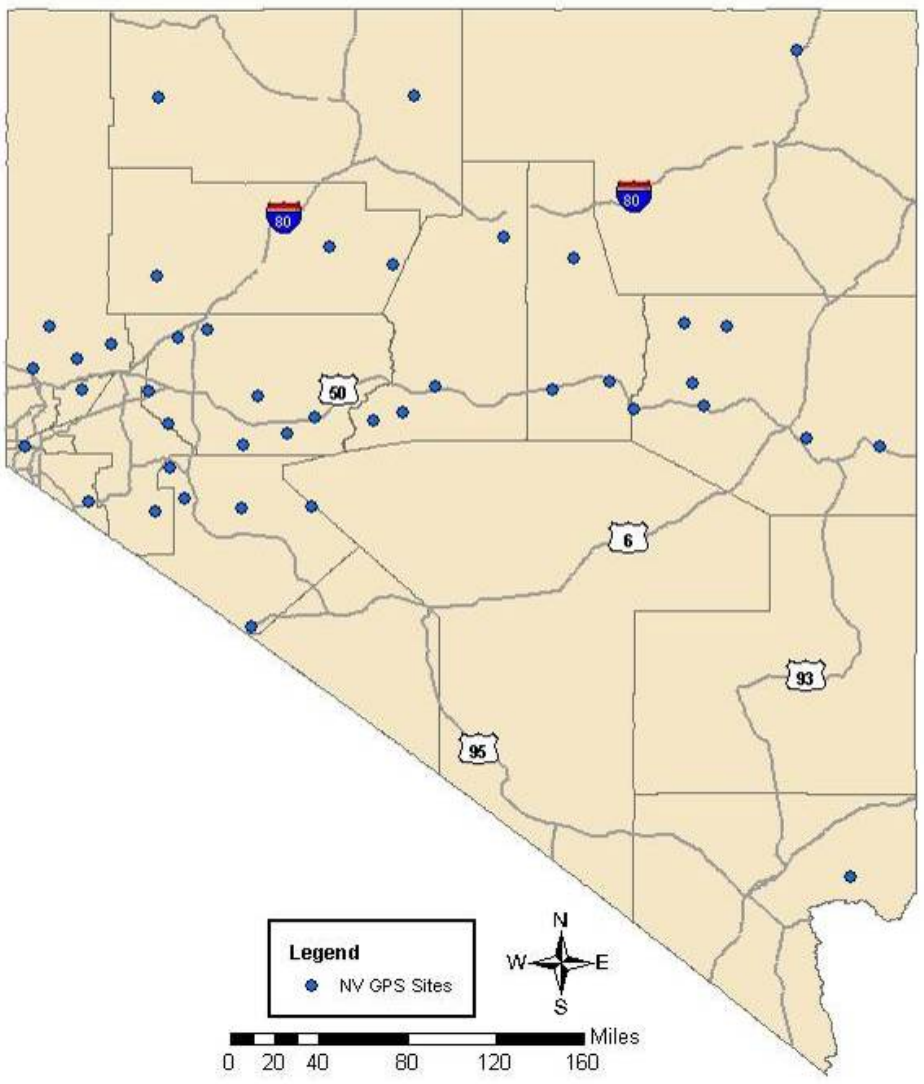

Figure 1-2. PBO Stations Proposed for Installation in Nevada

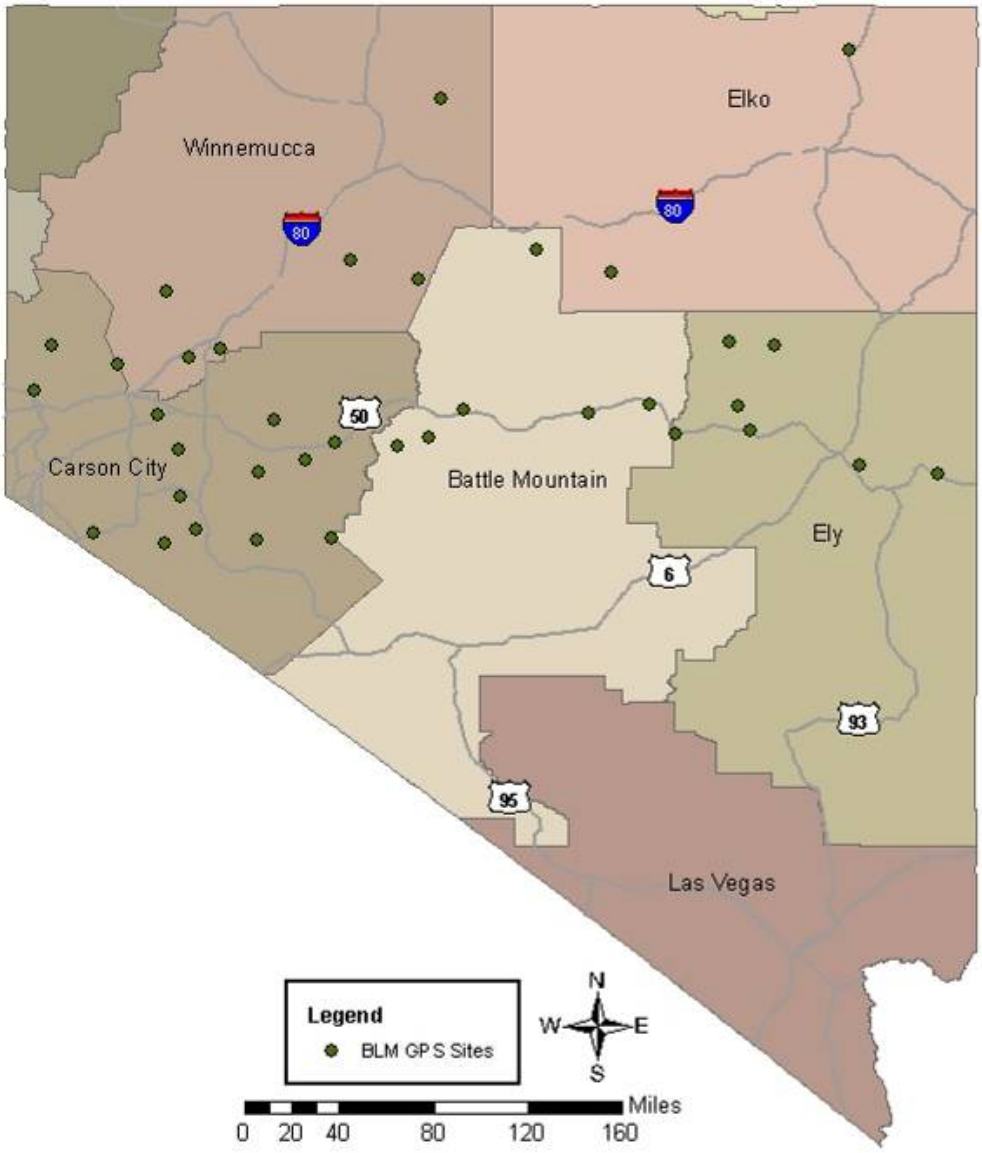

Figure 1-3. PBO Stations Proposed for Installation on Nevada BLM Lands by Field Office

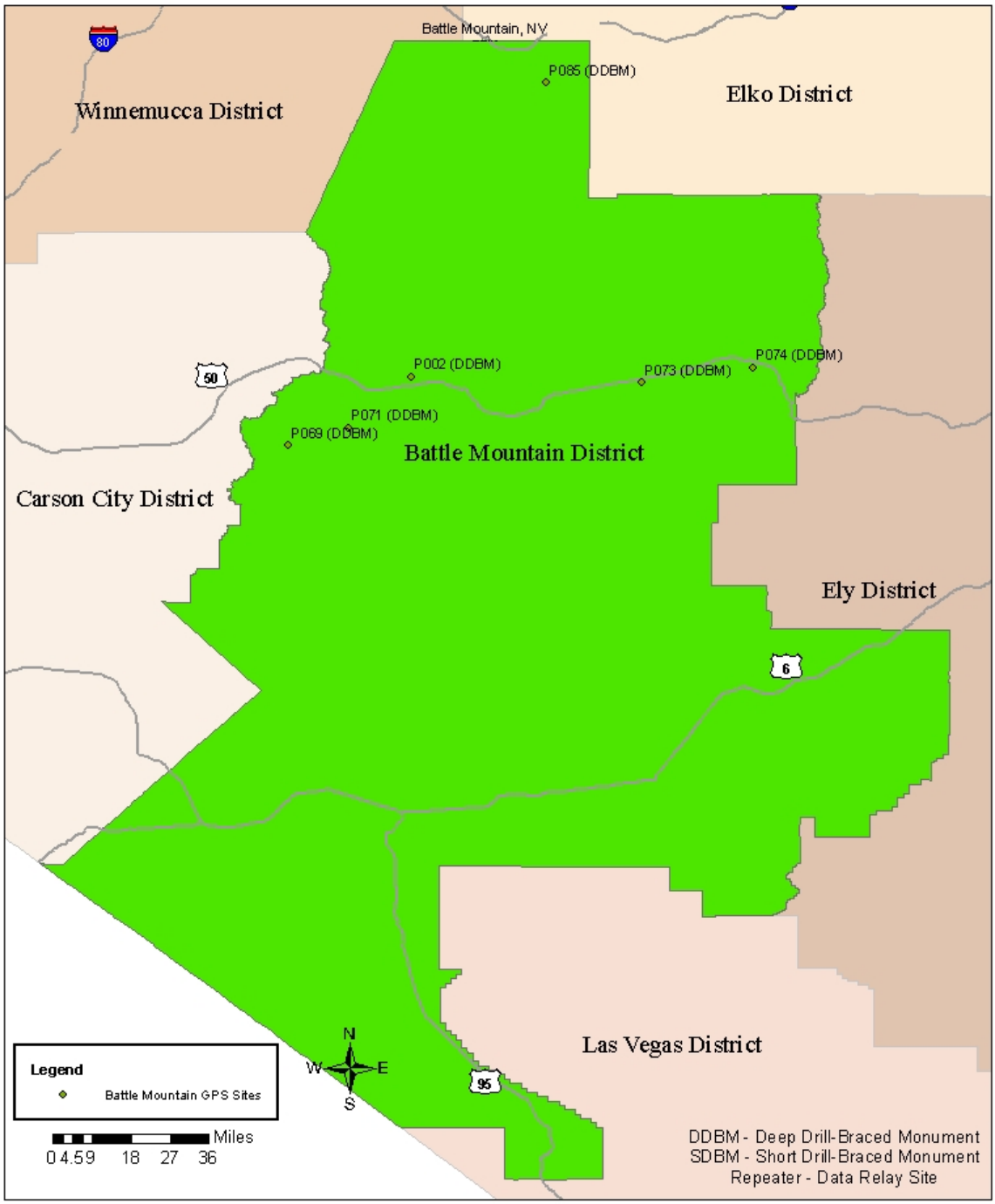

Figure 1-4. Proposed PBO Stations in the Battle Mountain District

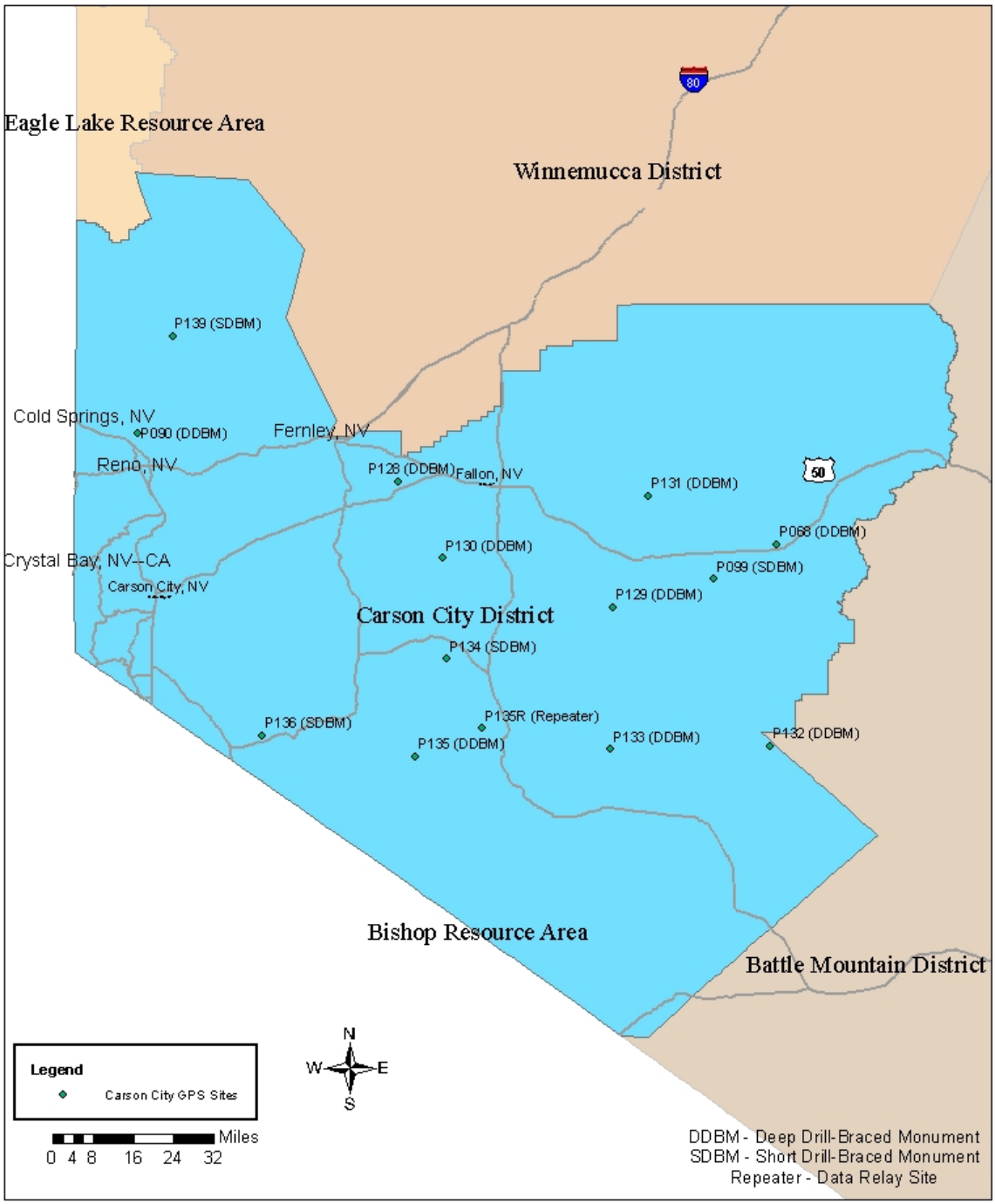

Figure 1-5. Proposed PBO Stations in the Carson City District

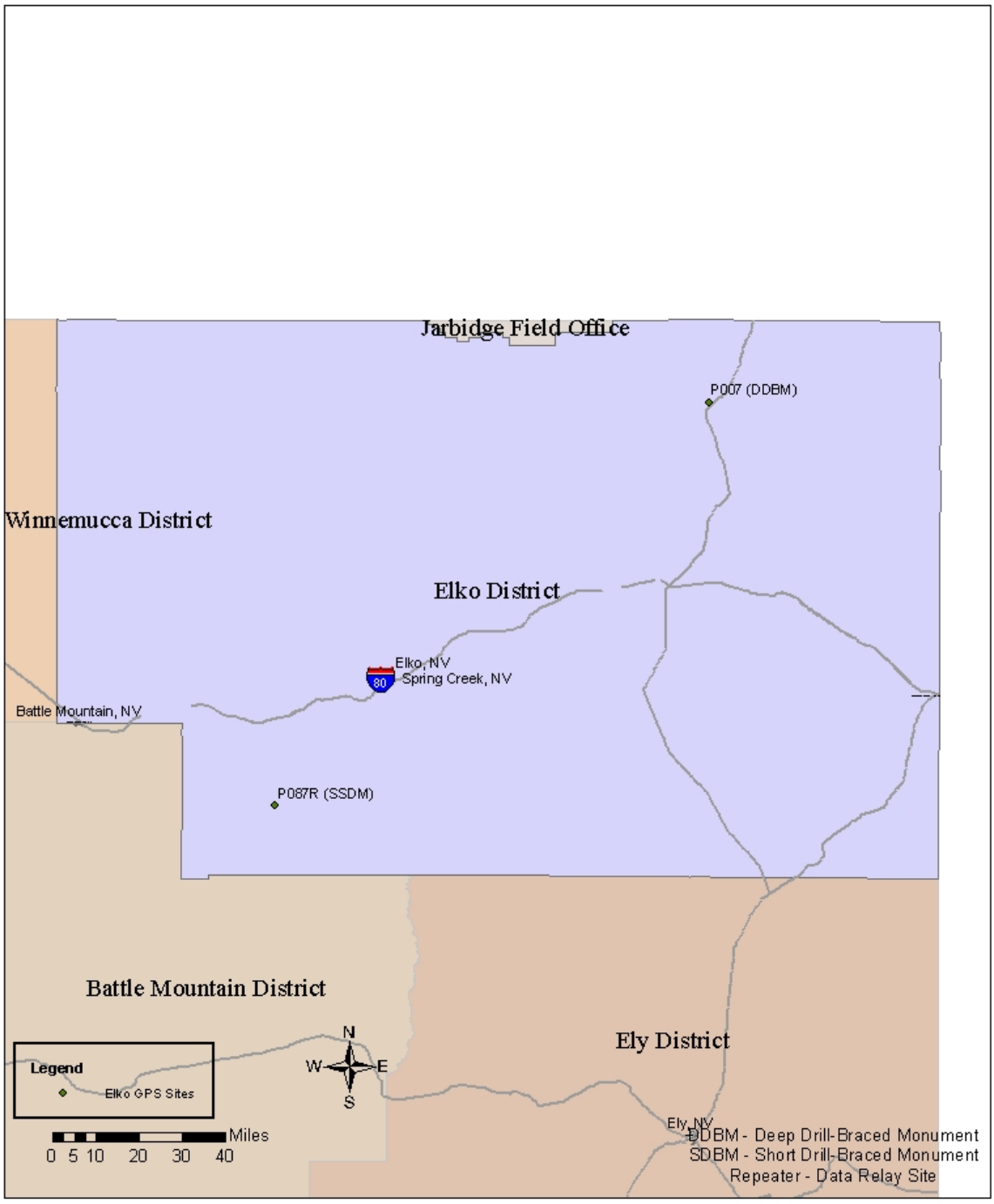

Figure 1-6. Proposed PBO Stations in the Elko District

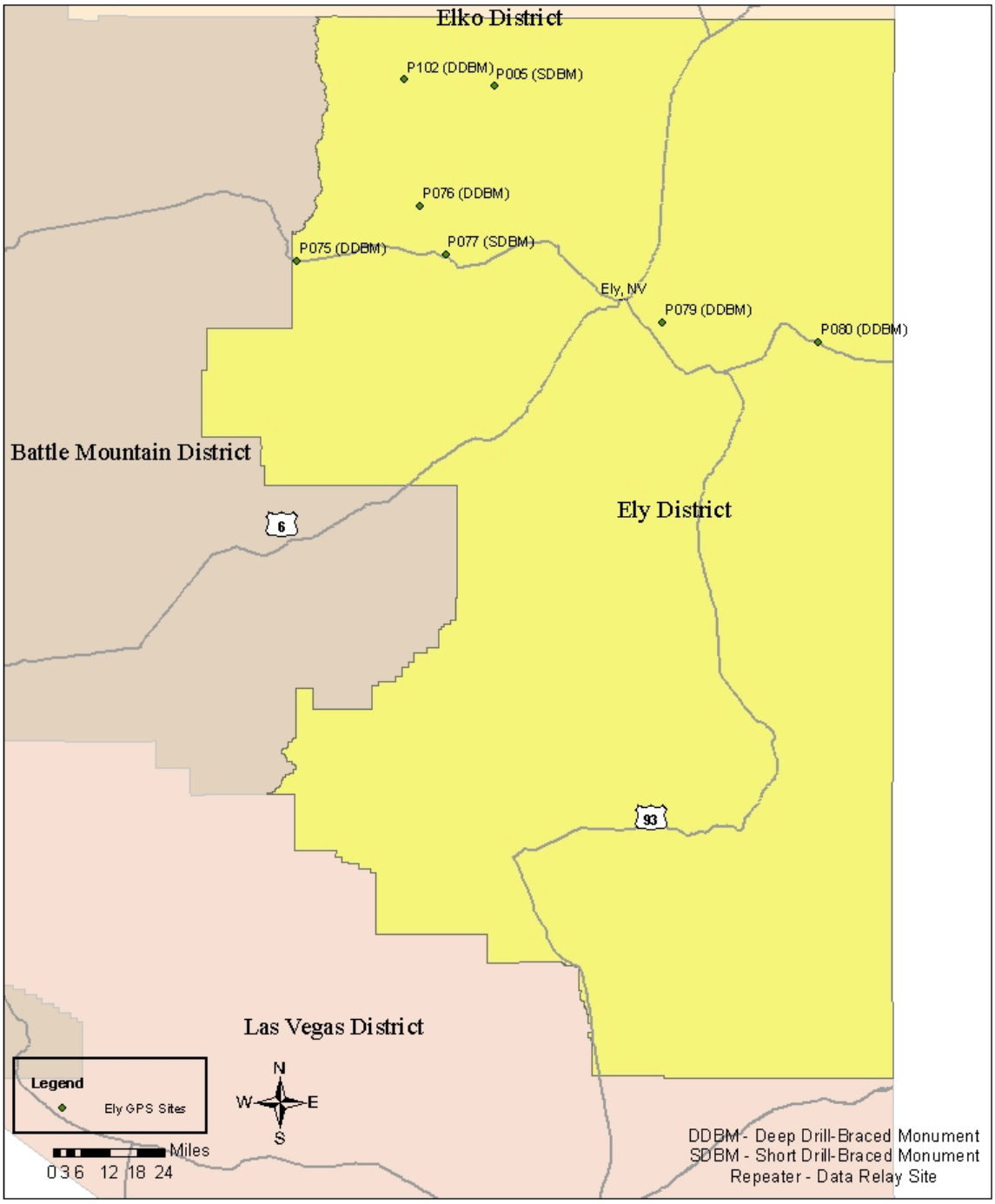

Figure 1-7. Proposed PBO Stations in the Ely District

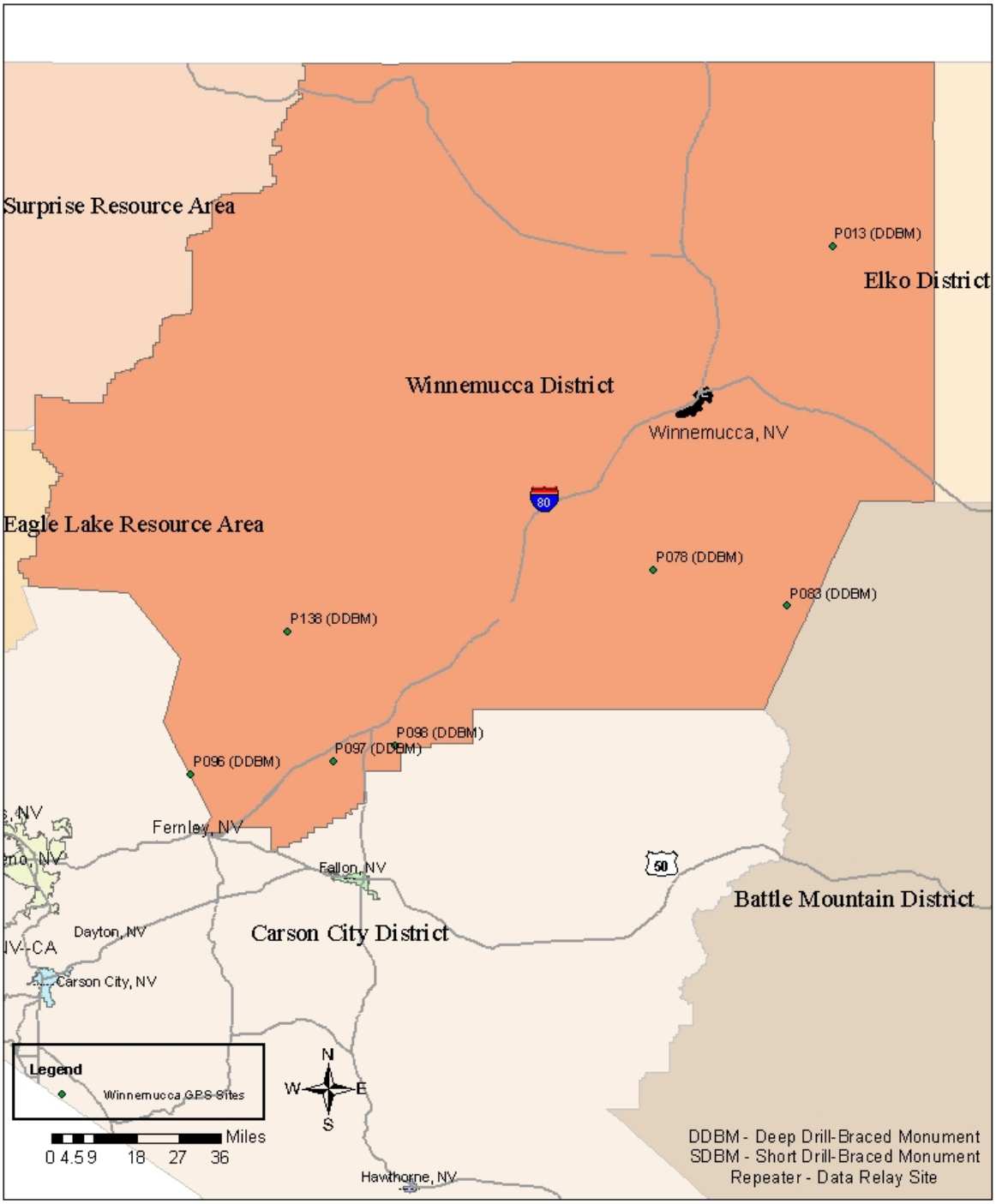

Figure 1-8. Proposed PBO Stations in the Winnemucca District

1.4 Purpose of and Need for the Proposed Action

The PBO Project consists of the construction and operation of a geodetic observatory for the purpose of studying the Earth's surface deformation across the active boundary zone between the Pacific and North American plates in the western United States. To accomplish the scientific objectives of the PBO Project, the observatory would consist of a carefully designed and integrated network of CGPS receivers. Taken together, these instruments would span the broad temporal and spatial spectrum of plate boundary deformation. The integrated deployment of these instruments provides temporal resolution over the full set of time scales from minutes to decades at the necessary spatial resolution and aerial coverage of the plate boundary system.

Currently, there is a very sparse geodetic network in the western United States. The limited geographic coverage of this network contributes to a lack of understanding of basic Earth processes, and this lack of understanding increases the risk that the public could be harmed by geologic hazards.

The PBO Project is designed specifically to fill the gaps in the existing geodetic network. Through the use of modern geophysical observational and monitoring equipment and satellite telecommunications technology, the proposed geodetic network would provide round-the-clock observational data that describes the geophysical condition of Nevada as well as the western United States and Alaska.

Additional objectives of the PBO Project are to provide a foundation for fundamental and applied research throughout the western United States and Alaska that will help mitigate risks from geological hazards and contribute to the public's understanding of the dynamic nature of the Earth.

Many of the most prominent volcanic and tectonic features in the western U.S. occur on federal land. Because the geologic strain at these locations can manifest itself at the Earth's surface tens or hundreds of miles away, it is necessary that these features are observed.

The Proposed PBO network provides several additional public benefits:

- PBO CGPS data provides information about seismic activity and plate movement.
- PBO stations are very stable and have known velocity vectors that provide survey/geodetic control for land surveying.
- PBO CGPS data is available as a 24-hour, 15-second CGPS data file.

- EarthScope provides educational and outreach activities that can be incorporated into BLM public education programs.

1.5 Scope of this Environmental Assessment

This statewide EA was prepared to evaluate the expected impacts of the proposed project and to identify siting criteria to avoid or minimize those impacts.

The EA addresses the expected impacts of the Proposed Action and the No-Action Alternative. The assessment of potential impacts associated with each alternative focuses on areas where new construction would be required.

This EA evaluates site-specific issues associated with the individual PBO stations proposed for each Field Office. Location-specific factors such as soil/geology, vegetation, biological resources, and cultural resources) vary from site to site over the Nevada BLM Field Office regions. This EA identifies PBO station design characteristics and siting criteria that will avoid environmental impacts.

The Proposed Action and No-Action Alternative are described in Chapter 2 of this EA. The affected environment and the effects of the Proposed Action are described in Chapter 3. Agency consultation and coordination activities are summarized in Chapter 4, followed by a list of people who prepared and contributed to this EA. Informational sources used in the preparation of this EA are provided in Chapter 5, and appendices are in Chapter 6.

1.6 Conformance with BLM Land Use Plan(s)

The BLM Nevada State Office considers installation of the PBO stations on its lands a compatible and beneficial use. The Proposed Action described in this EA is in conformance with the resource management or land use plans for the various Nevada BLM Field Offices. Appendix A provides a list of the resource management plans that were reviewed for conformance. Although the Proposed Action is not specifically mentioned in the resource management plans, it is consistent with the objectives, goals, and decisions for the resource management plans as they relate to programs and resources discussed in the resource management plans. The objectives, goals, and decisions for the plans vary from Field Office to Field Office but, in general, the plans seek to balance the protection of sensitive resources, including wildlife, vegetation, historic and archeological resources, and visual qualities, with multiple uses such as mining, grazing, and recreation.

Under the Proposed Action, the proposed PBO stations were located using siting criteria that require the avoidance of sensitive resources. Section 2.2.3 and Appendix B provide more information about the siting criteria.

Generally, large potential siting areas were identified by first applying siting criteria that disqualified the following areas:

- Areas highly prone to erosion
- Areas of known paleontological resources
- Conflicts with mineral rights and oil and gas leases
- Areas protected by the Wild and Scenic Rivers Act
- Designated recreation areas; natural national landmarks
- Areas established and managed for wildlife
- Designated wilderness areas
- Designated scenic highways

By excluding these areas, the PBO Project avoids sensitive resources identified in the various resource management plans.

Once the large siting areas were identified, evaluative criteria were applied to select the specific sites. The evaluative criteria disqualified areas with the following characteristics:

- Surface water
- Federal and state threatened, endangered, or rare species habitat
- Rare native plant communities
- Known cultural resources
- 100-year floodplains and wetlands in accordance Executive Orders 11988 and 11990

By using these criteria, specific sites were shifted within the larger areas to avoid impacting resources and to comply with the specific resource guidelines of individual resource management plans. These criteria complement the standard operating procedures for the Field Offices, which are intended to preserve and enhance environmental resources. The standard operating procedures are similar but vary slightly between the Field Offices. The standard operating procedures for each Field Office have been reviewed and are consistent with the Proposed Action. The site selection process results in sites that are consistent with the BLM program and resource goals, objectives, and decisions as they relate to the land use plans. New land use plan decisions would not be necessary to accommodate the Proposed Action.

1.7 Permits Required for Project Implementation

1.7.1 BLM Temporary Use Permit

This permit would be required to perform temporary construction activities at approved PBO station sites.

1.7.2 BLM Right-of-Way Grant

This permit would be required for long-term occupation by the proposed PBO stations. SF-299 applications were submitted to the appropriate BLM Field Offices beginning in early 2005. UNAVCO is requesting right-of-way grants for a period of 20 years.

1.7.3 BLM Permitting Procedure

All proposed actions on or affecting public lands or resources under BLM jurisdiction must be reviewed for NEPA compliance. The Nevada State Office of the BLM is responsible for complying with CEQ's Regulations for the Procedural Provisions of NEPA (40 CFR Parts 1500–1508) as they apply to the proposed PBO Project. This EA was prepared in accordance with the BLM National Environmental Policy Handbook (BLM 1988) to integrate those procedures into the planning and decision-making process and to provide a logical and coherent record of NEPA compliance.

The BLM Nevada State Office has determined that a Statewide EA is the appropriate level of NEPA review because the PBO Project is proposed to be constructed within five BLM Field Offices. The Statewide EA provides a framework for avoiding impacts and evaluating the overall project on BLM administered public land in Nevada. Actual permitting for individual site construction and operation would occur at each Field Office.

For each Field Office, a SF-299 *Application for Transportation and Utility Systems and Facilities on Federal Lands* was submitted per local and/or base station. SF-299 applications provided complete site information, including site locations, 1:24,000 topographic maps and aerial photographs, construction and installation detail, and construction and facility photographs for installations proposed for each Field Office. Following the 30-day public review period for the Statewide EA, the State Office will issue a Finding of No Significant Impact/Decision Record (FONSI/DR), and each Field Office will issue or deny the necessary right-of-way grants.

Chapter 2: DESCRIPTION OF THE ALTERNATIVES

2.1 Alternative 1: No-Action

Under the "No-Action" Alternative, installation of PBO stations would not occur on BLM-administered lands in Nevada. Implementation of this alternative would not meet the stated purpose of and need for the project. Because of the extent and location of BLM administered public land in the state, placing stations only on non-BLM land would severely limit the usefulness of the proposed PBO network in one of the most seismically active[1] and geologically complex areas of the United States.

2.2 Alternative 2: Proposed Action – Install PBO Network

In Nevada, 44 new CGPS stations are planned for installation. Of these 44 sites, 35 CGPS stations and one data relay site are proposed to be installed on Nevada BLM administered public land by UNAVCO.

Installation of the Nevada network would occur over a three-year period. Construction began in 2004 with installations on private property in Nevada. UNAVCO would operate the facilities for 20 years with the expectation that individual consortium members would then assume operation and maintenance of the PBO stations after that period. The installation of these facilities would be done as specified in Section 3.7, Construction Provision Summary, including limiting construction to day-light hours and construction limitation periods for migratory birds.

Once constructed, the PBO stations would not require operational support other than an annual maintenance visit to check the condition and functionality of the equipment. In many cases, maintenance could occur only once every two to five years, depending on the life of the equipment batteries. UNAVCO maintenance personnel would access the sites using motorized vehicles on established roads; the final approach to the sites would be on foot. Maintenance visits would require minor foot traffic around the installation. Unless the equipment is vandalized, no other site support would be required.

[1] Nevada is located in "earthquake country." It lies within the Basin and Range province, one of the most seismically active regions in the United States (Nevada Seismological Laboratory 2005).

2.2.1 PBO Station Components

The above-ground components of a PBO installation include a CGPS monument and an equipment mast consisting of an enclosure box with the CGPS instrument, solar panels, and communications systems. Figure 2-1 illustrates a design that is typical of either a short or deep drill-braced monument (described below). For some site configurations, an additional data relay or repeater site might be needed (Figure 2-2 and 2-3).

There are two types of CGPS monuments—short drill-braced and deep drill-braced monuments. These monuments differ by their method of installation and depth into the ground. The CGPS monument is made up of a GPS antenna and radome that are supported by up to five stainless steel rods—a center rod and three to four supporting rods that are drilled at approximately a 55-degree angle into bedrock. The stainless steel rods are 2.5 centimeters (cm), or 1 inch (in), in diameter and extend about 1 meter (m), or 3 feet (ft), above the ground surface. The total height of the monument is about 1.8 m (6 ft) including the GPS antenna and radome.

The enclosure box, solar panel, and communication system are mounted on an approximately 8-cm (3-in) diameter stainless steel pole referred to as the equipment mast. The foundation of the pole is 46 cm (18 in) in diameter. Connecting the CGPS monument and equipment mast is a below-ground component of the installation. The below-ground component includes an approximately 8-cm (3-in) wide and 30-cm (12-in) deep trench for the wiring that connects the CGPS monument and the equipment mast.

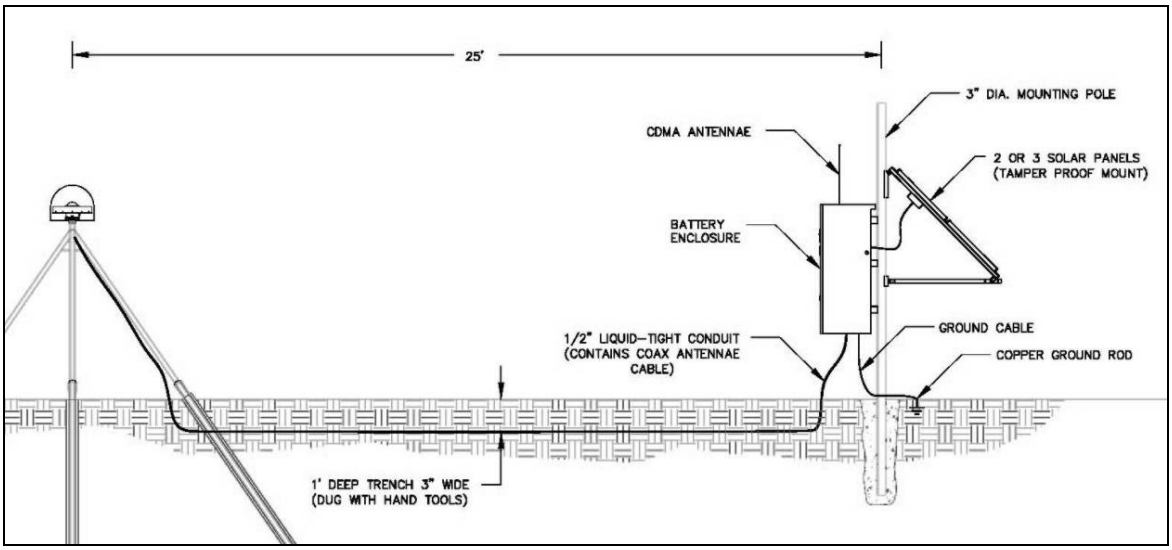

Figure 2-1. Engineered Drawing of a Typical Short or Deep Drill-Braced Monument

GPS data from the PBO sites is transmitted to a central database using Internet connections. These connections can be made anywhere that adequate cellular phone service is available. Internet connections at PBO stations are typically obtained using a Code Division Multiple Access (CDMA) digital cellular technology modem at the site. In some remote locations, it is not possible to obtain this Internet connection, so a stand-alone data relay site is needed to transmit GPS data from the PBO station. The data relay site uses an Intuicom/Freewave radio to establish a CDMA connection, Very Small Aperture Terminal (VSAT) satellite phone connection or hardwired connection to the Internet to transmit PBO station data when the connection is not possible at a GPS station.

The data relay site can also function as a repeater site using an Intuicom/ Freewave radio to transmit data from one GPS site to another GPS site with communications to the Internet by CDMA modem, to another GPS site with a VSAT connection to the Internet, or to a Intuicom/Freewave radio repeater site. The repeater sites are used to relay the data signal over mountains and other terrain to reach another site.

Where possible, the data relay sites would be collocated with existing telecommunication facilities. For data relay sites that cannot be collocated, the data relay sites would consist of an equipment pole and box that look similar to the equipment mast of the PBO station. For VSAT data relay sites, a dish might be located on or near the equipment pole. The diameter for each of the equipment poles is about 8 cm (3 in). The foundation of the poles is 46 cm (18 in) in diameter.

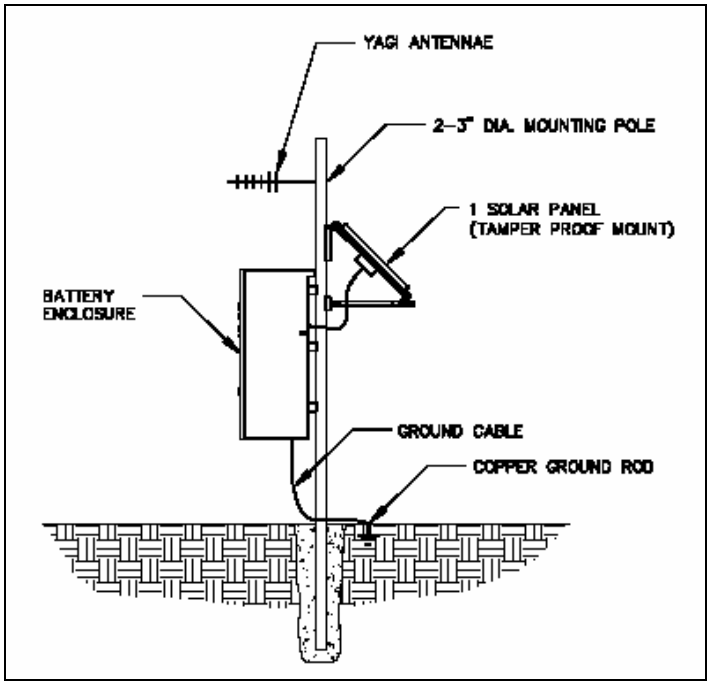

Figure 2-2. Engineered Drawing of a Typical Data Relay/Repeater Site

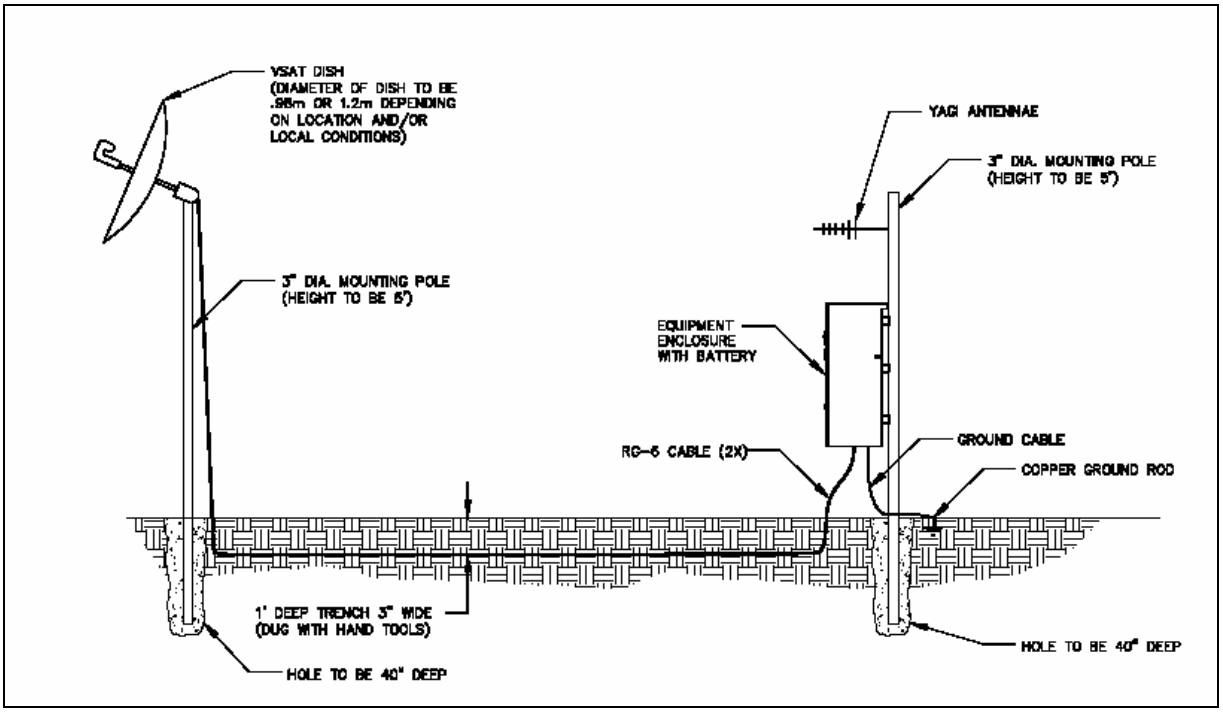

Figure 2-3. Engineered Drawing of a Typical VSAT Data Relay Site

2.2.2 PBO Station Installation

2.2.2.1 Short Drill-Braced Installations

Short drill-braced monuments are small, hand-drilled geodetic monuments that can be installed quickly. Short drill-braced monuments are well-suited for environmentally sensitive areas or extremely remote locations. These installations would use portable equipment that can be hand-carried, packed on animals, delivered on a helicopter, or driven by a four-wheel-drive or all-terrain vehicle (ATV) on four-wheel-drive roads. Where permitted (which would be in most cases) equipment and personnel would be transported to the site using one four-wheel-drive pickup truck with a 4-m (14-ft) trailer.

At each of these installations, a center hole and three or four perimeter holes, 1 to 3 m (3 to 6 ft) deep, would be drilled at an angle into bedrock using a generator-powered, hand-held rotary hammer (Figure 2-4 a). This type of monument would be acceptable only where bedrock is within 0.3 m (1 ft) of the surface.

Installation time is about one to two days depending on site-specific conditions. The short-term construction disturbance would be 74 square meters (m^2), or 800 square feet (ft^2). Immediately following site construction, the site will be rehabilitated to pre-construction conditions and, where applicable, will be revegetated according to BLM guidelines.

Figure 2-4 shows (a) the site being constructed and (b) the installed CGPS equipment. Appendices B and C provide additional detail on location siting and the construction of short drill-braced installations.

(a)

(b)

Figure 2-4. (a) Drilling a Short Drill-Braced Monument and (b) Final Site

2.2.2.2 Deep Drill-Braced Installations

Deep drill-braced installations use a track-mounted drill that requires a clearing about 18 m (60 ft) in diameter for maneuvering around the proposed monument location, for a total construction disturbance of 263 m^2 (2,827 ft^2). A center hole and three or four perimeter holes are drilled at an angle (Figure 2-5 a) to a depth of about 10 to 15 m (33 to 49 ft) such that steel pipes inserted in the holes meet above ground to form a quadpod/pedpod monument.

These types of installations are best within the rights-of-way or near paved/improved dirt roads and on relatively flat ground. Deep drill-braced monument installation would require two or three four-wheel-drive pickup trucks with 4-m (14-ft) trailers and one 18-wheel semi-truck to deliver the tracked drill rig. Because of the need for the drill rig, these monuments would be installed only in areas where roadways are wide enough and improved (that is, paved or graded and maintained) to a condition to accommodate the semi-truck. At the site, the track-mounted drill rig would be removed from the semi-truck and driven from the road to the adjacent PBO station location. These monuments can be installed in almost any type of subsurface material. Installation time is about two days. Figure 2-5 shows a deep drill-braced station (a) being installed and (b) the installed CGPS equipment.

Immediately following construction, the site will be rehabilitated to pre-construction conditions and, where applicable, will be revegetated according to BLM guidelines.

Appendices B and C provide additional detail on siting criteria and the construction of deep drill-braced installations.

(a) (b)

Figure 2-5. (a) Drilling a Deep Drill-Braced Monument and (b) Final Site

2.2.2.3 Equipment Mast

The equipment mast is installed at the same time as either the short drill-braced or deep drill-braced monuments. A 46-cm (18-in) diameter hole is excavated and filled with concrete to support the approximately 8-cm (3-in) diameter stainless steel pole. The enclosure box, solar panel, and communication system are mounted to the pole. These installations use portable equipment that can be hand-carried, packed on animals, delivered on a helicopter, or driven by a four-wheel-drive vehicle or ATV on four-wheel-drive roads.

2.2.2.4 Data Relay / Repeater Site

The installation of the data relay / repeater sites is similar to the installation of the equipment mast for sites that are not collocated with existing telecommunication facilities. For collocated sites, the data relay equipment will be mounted to the existing facility.

2.2.2.5 PBO Site Fencing

In some instances, it may be necessary to fence a PBO station site. The request to fence the site may come from UNAVCO to protect the CGPS receivers or from BLM to protect a resource. Fencing would be installed according to BLM Field Office specifications and is discussed in Chapter 3 by Field Office, including specific height requirements and material types in Section 3.7, Construction Provision Summary. The fencing would be within the proposed PBO station boundaries

2.2.3 Siting Process

Proposed individual PBO station locations were selected using a systematic siting process to maximize operational capabilities and minimize adverse environmental impacts. The siting process consisted of three phases that selected the best locations by progressively eliminating from consideration infeasible and less desirable sites. The three phases were network definition, regional screening, and individual site evaluation. Most potential environmental impacts were minimized by siting monuments where they would avoid sensitive areas and resources. Potential geographic siting areas were assessed based on the network's technical constraints and capabilities, environmental constraints, and other considerations such as government agency or local officials concerns.

Each CGPS installation has a siting tolerance of 2 to 24 km (1.2 to 15 mi) from the center point of the ideal location. In other words, the CGPS monument can be located anywhere within a 2- to 24-km (1.2- to 15-mi) radius around a center point and still function as part of the proposed PBO network. The siting process and criteria are described in detail in Appendix B.

2.3 Alternatives Considered but Eliminated from Further Analysis

No additional alternatives were considered. There is currently no substitute technology for monitoring seismic and volcanic activities, and the configuration of the geodetic network (location of PBO stations) is dictated by the volcanic and tectonic structure of the Earth's crust.

2.4 Summary Comparison of Environmental Impacts

Table 2-1 provides a summary comparison of Alternative 1 (No-Action) and Alternative 2 (Proposed Action – Install PBO Network). Impacts to the environment are discussed in detail in Chapter 3, Affected Environment/ Environmental Effects.

Table 2-1 Summary Comparison of the Alternatives

Impact Topics	Alternative 1: No-Action	Alternative 2: Install PBO Network
Land use plans	No impact	Compatible use
Soils and geology	No impact	Minor impact
Transportation and access	No impact	Minor impact
Air quality	No impact	Minor impact
Noise	No impact	Minor impact
Biological resources	No impact	Minor Impact
Cultural resources	No Impact	Minor Impact
Visual resources	No impact	Minor impact
Recreation/visitor services	No impact	Minor impact
Grazing allotments	No impact	Minor impact
Wild horses/burros	No impact	Minor impact

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Chapter 3: AFFECTED ENVIRONMENT/ ENVIRONMENTAL EFFECTS

This EA evaluates the environmental, social, and economic effects from the proposed PBO stations within the jurisdictions of the Battle Mountain, Carson City, Elko, Ely, and Winnemucca BLM Field Offices. The chapter is organized by Field Office. The section for each Field Office describes the existing conditions, the environmental effects of the proposed PBO stations, and mitigation measures for the affected resources. This information is based on readily available environmental information, information from BLM resource specialists, and reconnaissance visits. Because of the siting criteria (Appendix B) that were considered during siting of the proposed PBO stations, several resources would not be affected at all and the remaining resources would be affected very minimally. As appropriate, construction provisions would be implemented as part of the Proposed Action to further minimize impacts.

3.1 Critical Elements and Resources Not Affected

Because of the statewide scale of the EA, all of the critical elements and resources listed below are present in Nevada. However, because the PBO stations were sited using exclusionary and evaluative criteria and because the standard operating procedures for each Field Office were followed, the BLM resource specialists have determined that the critical elements listed below would not be affected by the Proposed Action.

Areas of Critical Environmental Concern. Locally designated preservation and conservation areas were avoided, so no Areas of Critical Environmental Concern (ACEC) would be affected.

Environmental Justice. No environmental justice populations are present near any of the proposed sites, so no environmental justice populations would be disproportionately affected.

Farmlands. Prime and unique farmlands were avoided when siting the proposed PBO stations, so no prime and unique farmlands would be affected.

Floodplains. Floodplains were avoided in siting the proposed PBO stations, so no sites would be constructed in floodplains.

Invasive Non-native Species. The potential for invasive non-native species to be introduced would be negligible due to the small amount of soil and

vegetation disturbed during construction. Additionally, drilling equipment would be washed after each site is drilled to remove seeds.

Native American Religious Concerns. The Proposed Action would avoid resource and religious locations determined to have importance to the free expression or practice of the Native American religion in accordance with the American Indian Religious Freedom Act. Each BLM Field Office conducted consultation or notification with the Native American tribes. The consultation or notification with the tribes is discussed in Chapter 4.

Land Use. The BLM manages about 19 million hectares (ha), or 48 million acres (ac), of public land in Nevada (which is about 67 percent of the state's land area) for a variety of land uses including recreation, conservation, mining, oil and gas extraction, livestock grazing, communication sites, and right-of-way corridors. These lands are managed within a framework of laws, the most comprehensive of which is the Federal Land Policy and Management Act (FLPMA) of 1976 (Public Law 94-579). The Proposed Action is compatible with multiple-use management on BLM administered public land and would not conflict with, or have any impact on, the land use plans or policies for any of the applicable BLM Field Offices. Although the proposed PBO Project does conform with the multiple-use directive of the BLM, minor long-term land use changes associated with the proposed PBO stations would remove some uses from the multiple-use designation. The total amount of land that would experience long-term land use changes due to the Proposed Action would be 2,442 m^2 or 0.24 ha (26,268 ft^2 or 0.60 ac) as shown in Table 3-3.

Paleontological Resources. No paleontological resources were identified by any of the Field Offices in areas near proposed PBO stations, so no paleontological resources would be affected.

Special-Status Species. Habitat for rare, threatened, endangered, or sensitive species was avoided during site selection. Sites were placed in areas where there are no known populations of sensitive species. Biologists in each Field Office confirmed that no special-status species would be affected.

Migratory Birds. Critical avian habitats as defined by the U.S. Fish and Wildlife Service (USFWS) and state wildlife agencies were avoided when siting the proposed PBO stations. Construction would occur as specified by BLM Field Office (See Section 3.7, Construction Provision Summary) to avoid impacts to migratory birds and to comply with Executive Order 13186, Responsibilities of Federal Agencies To Protect Migratory Birds.

Hazardous or Solid Wastes. No hazardous materials would be brought onto or produced at the proposed installations. Solid waste (cuttings) generated during the installation process would be collected in containers and removed from the site.

Water Quality (Drinking Water, Groundwater). Proposed PBO stations were not sited near surface waters. Short drill-braced monuments would be placed only in bedrock; deep drill-braced monuments could encounter a shallow well but the installation techniques would not cause any impacts.

Wetlands/Riparian Zones. Wetlands, riparian areas, and areas within surface water setbacks were avoided when siting the proposed PBO stations, so no wetlands, riparian zones, or areas within surface water setbacks would be affected.

Wild and Scenic Rivers. Wild and scenic rivers were avoided when siting the proposed PBO stations, so no wild and scenic rivers would be impacted.

Wilderness. Designated wilderness and wilderness study areas were avoided when siting the proposed PBO stations, so no wilderness or wilderness study areas would be affected.

Wildlife. Areas of critical habitat were avoided when siting the proposed PBO stations, so no critical habitat areas would be affected.

3.2 Effects of the Alternatives

Resources present and brought forward for analysis for the Proposed Action are discussed by each affected BLM Field Office. Resources that are discussed include: soils and geology; transportation and access, air quality, noise, biological resources, cultural resources, visual resources, recreation/visitor services, wild horses/burros, and grazing allotments. The Field Office resource information is discussed in the following sections:

- Section 3.2.1 Battle Mountain
- Section 3.2.2 Carson City
- Section 3.2.3 Elko
- Section 3.2.4 Ely
- Section 3.2.5 Winnemucca

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3.2.1 Battle Mountain

Six PBO stations are proposed on the Battle Mountain District land. All of the proposed PBO stations are deep drill-braced monuments and all six stations would be fenced.

3.2.1.1 Soils and Geology

Existing Conditions

Site-specific soil types and thicknesses and geologic (bedrock) conditions determine which type of CGPS installations would be used. Sedimentary and igneous bedrock is present at the surface for each of the six sites, with a shallow depth (about 1 ft) of soil on site P071. The following soil associations are present at the proposed PBO stations: Tenabo-Orovada-Buffran Association, Punchbowl-Jung-Locane Association, Ninemile-Zoestra-Itca Association, Mau-Shagnasty-Eightmile Association, Bartine-Overland Association, and Chiara-Dewar Association.

Developing the PBO network would not require the excavation or use of local sand, gravel, or rock resources for installation. Seismic and volcanic activity are not a concern because these are the hazards that will be observed by the PBO network. Detailed reviews of the local geology and seismic setting were completed as part of designing the network configuration. No geologic hazards such as land slides, rock falls, or soil subsidence are present at any of the proposed sites.

Effects of the Alternatives

Alternative 1: No-Action. The No-Action Alternative would have no direct impact on soils or geology. Because no PBO stations would be installed, there would be no surface or subsurface disturbance of soils or potential for construction-related erosion.

The No-Action Alternative, which consists of not installing the PBO network on Nevada BLM administered public land, would substantially limit the effectiveness of the PBO network. This would reduce the amount of in-depth knowledge of geology and seismic activity in Nevada.

Alternative 2: Install PBO Network. The PBO network siting criteria (Appendix B) dictate that areas highly prone to soil erosion be avoided.

When the network is installed, limited surface and subsurface disturbance would occur during the one- to two-day construction period for each station as shown in Tables 3-2 and 3-3. Long-term impacts would be restricted to the

area drilled for installation of the stainless steel legs and the foundation for the equipment mast.

A total of six PBO stations would be installed on lands managed by the Battle Mountain District. The total temporary surface disturbance would be 2,970 m^2 or 0.30 ha (31,962 ft^2 or 0.73 ac). Final installation would result in about 444 m^2 or 0.04 ha (4,800 ft^2 or 0.11ac) of long-term disturbance including the total fenced area.

This minor amount of ground disturbance would not have any substantive negative impact on soils or geological resources. Areas disturbed during installation would be revegetated according to BLM guidelines.

Additionally, the proposed PBO stations would increase knowledge of geological and seismic activity in Nevada.

Mitigation Measures

No mitigation measures would be required.

3.2.1.2 Transportation and Access

Existing Conditions

Transportation and access to any given PBO site would be conducted on existing roads, both improved and unimproved. Where installations are located some distance from an established roadway, final access to the site would be by foot, horse, ATV, or four-wheel-drive pickup truck.

Effects of the Alternatives

Alternative 1: No-Action. The No-Action Alternative would have no impact on transportation or access.

Alternative 2: Install PBO Network. Installation of deep drill-braced monuments would require two or three four-wheel-drive pickup trucks with 4-m (14-ft) trailers and one 18-wheel semi-truck to deliver the tracked drill rig. Because of the need for the drill rig, these monuments would be installed only in areas where roadways are wide enough and improved (that is, paved or graded and maintained) to a condition to accommodate the semi-truck. Roadways in these types of locations usually offer nearby pull-off sites where vehicles can be parked to avoid conflicts with passing traffic. The drill rig would be driven about 457 m (1,500 ft) from the dirt road to reach proposed site P002 and 122 m (400 ft) to reach proposed site P073. For the remaining

proposed sites, access is possible from existing roads. No new roadways would be constructed for the Proposed Action.

Maintenance activities would occur annually or, more likely, on a two- to five-year cycle. Maintenance inspections would involve one or two crew members visiting a site using one four-wheel-drive pickup truck. The final approach from the nearest road to the installed monuments would be on foot.

Impacts to transportation routes and access on BLM administered public land would be negligible and would not obstruct BLM administered public land or resources. Installation of the network would have a negligible impact on existing BLM roadways. The area temporarily disturbed by equipment accessing sites P002 and P073 would be revegetated to preconstruction conditions according to BLM guidelines.

Mitigation Measures

No mitigation measures would be required.

3.2.1.3 Air Quality

Existing Conditions

The Federal Clean Air Act (CAA) of 1970 and the Clean Air Act Amendments of 1990 require the U.S. Environmental Protection Agency (EPA) to adopt air quality standards and implement environmental policies that ensure cleaner air quality. Standards were established to protect public health, safety, and welfare from known or anticipated adverse effects of several criteria pollutants: sulfur dioxide (SO_2), particulate matter under 10 microns in diameter (PM_{10}), particulate matter under 2.5 microns in diameter ($PM_{2.5}$), carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), and lead (Pb). The State of Nevada has set air quality standards for criteria pollutants that are generally based on the federal standards for air quality. The Nevada State Environmental Commission has also established an air quality standard for hydrogen sulfide (State of Nevada 2002).

Areas where air quality exceeds the National Ambient Air Quality Standards (NAAQS) for criteria pollutants are called nonattainment areas, and states must develop plans for attaining and maintaining the NAAQS in these areas. These plans generally include emissions reduction measures, such as limitations on stationary source emissions, and work practice standards. There are no nonattainment areas on Battle Mountain Field Office land.

In Nevada, the Bureau of Air Pollution Control (BAPC) requires a permit for source emissions, but a permit is not required if activities, equipment, or

storage containers will not cause emissions other than steam or water particles. The BAPC maintains a list of insignificant and trivial sources of air pollution which include hand-held equipment, air compressors, and pneumatically operated equipment. Mobile sources of emission are regulated under
NRS 445B.700 – 445B.834, which include vehicle inspections. The BAPC also regulates fugitive dust through surface area disturbance permits. Projects not related to agriculture that disturb more than 5 ac of surface area must obtain a surface area disturbance (SAD) permit and prepare a dust control plan (BAPC, no date).

Effects of the Alternatives

Alternative 1: No-Action. The No-Action Alternative would have no impact on existing air quality.

Alternative 2: Install PBO Network. The proposed PBO stations would have no operational emissions, so no air quality impacts would occur from site operation.

Construction of deep drill-braced monuments requires the use of a track-mounted drill rig (see Section 2.2.1.2). Exhaust emissions from the drill rig for the two-day installation period would have a negligible impact on air quality at the deep drill-braced sites. Two types of drills are commonly used: Komatsu PC 45 Excavator and Ingersoll Rand ECM 370. For hard-rock drilling, when a smaller track-mounted drill rig is used (Komatsu PC 45 Excavator), an additional high-pressure air compressor is sometimes used in conjunction with the track-mounted drill rig. The Ingersoll Rand P185WIR air compressor that is used is a 65-horsepower unit. The drilling equipment that UNAVCO would use falls under regulated mobile sources of emissions or is listed on the trivial emissions list (hand-held equipment and air compressors and pneumatically operated equipment, including hand tools, are considered trivial sources and are not monitored for air quality pollution by the State of Nevada).

Due to the small area of disturbance (495 m^2 or 5,327 ft^2 per PBO station) where construction activities would occur and the short duration of the construction period (one to two days) for each site, fugitive dust emissions from construction activities would be negligible. Installation of all six proposed PBO stations would disturb 2,970 m^2 or 0.30 ha (31,962 ft^2 or 0.73 ac) for construction of all of the CGPS monuments. A SAD permit and a dust control plan would not be required because the total area of disturbance would be less than 5 ac.

Because no emissions would be produced during operation of the CGPS sites and the disturbance would occur in dispersed sites on Battle Mountain District land and in different time periods for one to two days, the construction of PBO stations under Alternative 2 would have a negligible effect on air quality.

Mitigation Measures

No mitigation measures would be required.

3.2.1.4 Noise

Existing Conditions

The unit used to describe the intensity of sound is the decibel (dB). The A-weighted decibel scale approximates the range of human hearing by filtering out lower-frequency noises, which are less damaging than higher-frequency noises. The A-weighted decibel, denoted as dB(A), is the unit of noise measurement used in most noise ordinances and standards. For a frame of reference, the threshold of hearing is 0 dB(A), an air conditioner at 6 m (20 ft) is 60 dB(A), and an auto horn at 1 m (3 ft) is 120 dB(A) (CEQ 1970).

The Noise Control Act of 1972 and its subsequent amendments (Quiet Communities Act of 1978 [42 U.S.C. Parts 4901 – 4918]) delegate authority to regulate environmental noise to the states and direct government agencies to comply with local community noise statutes and regulations (EPA 1974). In Nevada, Nevada Revised Statutes (NRS) 244.363 gives counties the authority to enact noise ordinances to regulate, control, and prohibit excessive noise that is injurious to health or interferes with the enjoyment of life or property within the county. Typical levels of acceptable noise are tied to land use and range from 60 dB(A) (residential) to 75 dB(A) (industrial) day-night average sound levels (L_{dn}).

Effects of the Alternatives

Alternative 1: No-Action. The No-Action Alternative would have no impact on ambient noise levels.

Alternative 2: Install PBO Network. Once installed, the proposed PBO stations would not emit any discernible operational noise. Construction noise would be limited to the one or two days required for equipment installation.

To install the CGPS units, handheld rotary drills and track-mounted drills would be used. The handheld rotary drill would be powered by a Honda EU2000i four-stroke generator. These 3.5-horsepower, single-cylinder

engines are totally enclosed and produce 59 dB(A) of sound at 7 m (23 ft) under a full load, which is less than the noise level of everyday speech. The track-mounted drill (Ingersoll Rand ECM 370) produces noise levels that range from 85 dB(A) at 16 m (42 ft) behind the drill to 92 dB(A) at 10 m (33 ft) in front of the drill (Ingersoll Rand 1990). Sometimes an additional high-pressure compressor unit would be used with the track-mounted drill for hard-rock drilling. The high-pressure compressor unit produces 76 dB(A) of sound at 7 m (23 ft) (Ingersoll Rand 2005).

The PBO stations on the Battle Mountain District lands would not be near sensitive noise receptors (such as residences, schools, or hospitals), as dictated by the PBO Network siting criteria (Appendix B). The noise impacts of construction would be intermittent during the one- to two-day construction period. No construction would occur during nighttime hours. For these reasons, the Proposed Action is not expected to have any substantive noise impact.

Mitigation Measures

No mitigation measures would be required.

3.2.1.5 Biological Resources

Existing Conditions

The Proposed Action would be located in the Nevada-Utah Mountains Semidesert–Coniferous Forest–Alpine Meadow Province Ecoregion. Sagebrush species dominate the ecosystem, but shadscale, fourwing saltbush, rubber rabbitbrush, spiny hopsage, and horsebrush are also present (Bailey 1995). The proposed PBO stations would be located at elevations between 1524 and 2286 m (5,000 and 7,500 ft). Typical vegetation encountered at these elevations includes big sagebrush, black sagebrush, rabbitbrush, service berry, snowberry, and mountain mahogany in the shrub layer and Sandberg bluegrass, bluebunch wheatgrass, giant wild rye, Idaho fescue, and cheatgrass in the herbaceous layer (Battle Mountain RMP, p. 3-8). On the six proposed PBO stations, sagebrush species dominant but there are scattered junipers present at most sites. Grasses are largely absent from the sites as the soils are shallow and bedrock is close to the surface. No wetland or riparian areas are present at any of the proposed PBO stations.

Mule deer are the primary big game animals found in or near the proposed installation areas. Yearlong ranges occur for mule deer at elevations below 2286 m (7,500 ft); the proposed sites are in this range (Battle Mountain RMP, p. 3-2)

Bird species found in or near the proposed installation areas area include burrowing owls to sage sparrow and sage thrasher. Raptors, including the American kestrel, ferruginous hawk, and golden eagle, can be found (Bailey 1995). Sage grouse nesting and brood-rearing habitat is in the area (Crimmins 2005).

No federal or state threatened and endangered or sensitive species were reported for any of the proposed PBO station sites on Battle Mountain Field Office land.

Effects of the Alternatives

Alternative 1: No-Action. The No-Action Alternative would have no impact on existing vegetation or wildlife.

Alternative 2: Install PBO Network. Installing deep drill-braced monuments would disturb vegetation during the two-day construction period. Monument installation requires a track-mounted drill rig to maneuver in an area about 18 m (60 ft) in diameter around the proposed monument location. In some instances a 15 × 15 m (50 × 50 ft) staging area may also be necessary. The track-mounted drill rig would be delivered using a semi-truck and then driven the final distance to the installation location. Site P002 is located 457 m (1,500 ft) and Site P073 is located 122 m (400 ft) from the existing two-track road. Installation time would be about two days. Long-term ground disturbance would be restricted to the 0.17 m^2 (1.9 ft^2) area drilled for the monument legs and equipment mast foundation.

Impacts from construction activities would be short term. Vegetation would be cut and crushed, but the area of disturbance would be minor and plant roots and crowns would remain intact. Crushing or cutting vegetation will be avoided as much as possible. Vegetation is expected to re-establish in the short term depending on the location and the amount of rain received. The long-term impact area for a PBO station is small (0.17 m^2 or 1.9 ft^2); therefore, the existing vegetation would remain relatively intact and should recover. Any required revegetation would be completed according to BLM guidelines. Non-woody vegetation would be able to grow freely throughout the installation.

Raptors have been identified in the area. There is concern of predation on the sage grouse nesting or brooding in the area if raptors have unnatural perches that provide the birds with hunting advantages. However, the height of the PBO monuments is less than 6 feet, which is not high enough to provide an advantage for raptors. No devices to keep raptors out of the area would be necessary on the PBO equipment or fences (Stamm 2005). The panel fencing

used to protect the PBO sites would not be barbed wire and would not present a threat to sage grouse flying in the area.

Other wildlife might be temporarily disrupted during construction but would return to the area after construction is over within one to two days. Large mammals such as mule deer would be restricted from area directly around the PBO station but the range for mule deer would be largely unaffected due to the small vegetation disturbance and the fact that the vegetation would be allowed to regenerate. Small mammals would still be able to forage around the PBO stations.

Installation of six PBO sites on Battle Mountain District land (see Table 3-3) would disturb a total of 2,970 m^2 or 0.30 ha (31,962 ft^2 or 0.73 ac). Total long-term impacts would encompass 444 m^2 or 0.04 ha (4,800 ft^2 or 0.11 ac). Because construction impacts would be short in duration and would not remove the vegetation, and because the vegetation could continue to grow over the long term at all sites including those with fences, the Proposed Action would result in very minor long-term impacts to vegetation.

Mitigation Measures

No mitigation measures would be required.

3.2.1.6 Cultural Resources

Existing Conditions

Section 106 of the National Historic Preservation Act of 1966 as amended, and 36 CFR 800, the implementing code, requires that districts, sites, buildings, structures, or objects that are included on or are eligible for listing on the National Register of Historic Places be taken into account before a federal action is undertaken. Class III cultural resource surveys were completed by Kautz Environmental Consultants, Inc. (KEC) to determine if cultural resources were present at any of the proposed PBO stations. One-acre surveys were completed around the six proposed PBO stations and along the access roads to the PBO stations. The surveys were conducted in October 2005.

No prehistoric or historic cultural resources were found at any of the six proposed PBO stations. A Cultural Resources Inventory Negative Report was filed with the Battle Mountain Field Office for each of the PBO stations. The report numbers are as follows:

CRR-06-2552

CRR-06-2552-(1)

CRR-06-2552-(2)

CRR-06-2552-(3)

CRR-06-2552-(4)

CRR-06-2552-(5)

Effects of the Alternatives

Alternative 1: No-Action. The No-Action Alternative would have no impact on cultural resources.

Alternative 2: Install PBO Network. The PBO network siting criteria (Appendix B) dictate that the following areas and resources be avoided:

- Cultural resources listed or determined to be eligible for listing on the National Register of Historic Places.
- Resources and locations determined to have importance to the free expression or practice of the Native American religion, in accordance with the American Indian Religious Freedom Act.
- Areas that contain cultural resources of value at the state or local level but which are not considered eligible for National Register listing (for example, cultural properties listed on state or local registers or identified by state historians, state archaeologists, or other appropriate state and local agency personnel).

No prehistoric or historic cultural resources were found or recorded at any of the proposed PBO stations. Two previously recorded lithic scatters (stone tools and fragments) on access routes for proposed PBO stations P085 and P002 were not relocated. One isolated artifact was observed at PBO station P071; the isolated artifact is outside the area of impact of the proposed PBO station. No cultural resources would be impacted by the installation or operation of the PBO stations.

Mitigation Measures

No mitigation measures would be required.

3.2.1.7 Visual Resources

Existing Conditions

Visual resources refer to all visible objects and features on a landscape (that is, human-made and natural landforms whether moving or stationary). Because these resources contribute to and define the scenic or visual quality of the landscape, BLM is required to manage visual resources to protect the quality of scenic values. BLM has established methods for visual resource planning and assessing visual resource impacts (BLM 1986).

There are no Class I Visual Resource Management (VRM) areas in the Battle Mountain District jurisdiction. The proposed PBO stations are located in Class IV VRM areas.

Effects of the Alternatives

Alternative 1: No-Action. The No-Action Alternative would have no impact on visual quality.

Alternative 2: Install PBO Network. The PBO network siting criteria (Appendix B) dictate that areas designated as scenic highways, natural landmarks, or areas with visual concerns be avoided.

Minor visual impacts would result from the presence of vehicles and the disturbance of soils during installation of the PBO stations. These temporary impacts would be minor because construction is of such short duration (one to two days) and construction involves very few vehicles and a small area of soil disturbance.

Generally, the CGPS equipment would be seen by a few motorists, hikers, climbers, and back-country tourists in close range to the installation, which would have a minor impact on the visual quality of the area. The PBO monument posts and equipment mast will be painted brown to reduce the visual contrast of the equipment. For specific sites, this impact would be lessened by surrounding land uses. Sites P074, P073, and P071 would be located on hillsides, which would limit their visibility to people in the area.

All PBO stations would be fenced with large-gauge steel mesh to protect the CGPS equipment. Therefore, fences would not block views or introduce any visually dominant features into the landscape.

For these reasons, impacts from the Proposed Action on the visual quality of the landscape are expected to be minor and consistent with the designated Class IV VRM.

Mitigation Measures

No mitigation measures would be required.

3.2.1.8 Recreation/Visitor Services

Existing Conditions

Within the jurisdiction of the Battle Mountain District, recreation use is primarily dispersed, non-developed recreation such as hunting, off-highway vehicle use, and rock hounding (BLM 1983). Notable recreation areas include Hickison Petroglyph Recreation Area, Mill Creek Recreation Area, Railroad Valley Wildlife Management Area, Rhyolite Historic Area, and Tonkin Spring (Recreation.gov 2004). Hickison Petroglyph Recreation Area features ancient petroglyphs for viewing in addition to picnic and camping areas. Mill Creek Recreation Area is the site of a 1930s Civilian Conservation Corps work camp. Chimney Springs, Locke's Pond, Big Well Ponds, and Blue Eagle Pond are located in the Railroad Valley Wildlife Management Area and are visited for wildlife viewing. Rhyolite Historic Area, known for the Cook Bank Building, is a popular photography area. Tonkin Spring is an undeveloped recreation area at the mouth of Red Canyon (Recreation.gov 2004).

Effects of the Alternatives

Alternative 1: No-Action. The No-Action Alternative would have no impact on recreation or visitor services.

Alternative 2: Install PBO Network. The PBO network siting criteria (Appendix B) dictate that areas in national and state parks and designated recreational areas must be avoided. No proposed PBO stations would be located in the recreation areas noted above in the Existing Conditions section. The PBO stations would be located in areas that could potentially be used for off-highway vehicles (OHV). Installation of six PBO sites on lands managed by the Battle Mountain Field Office (see Table 3-3) would remove 444 m^2 or 0.04 ha (4,800 ft^2 or 0.11 ac) from OHV use. These long-term impacts include the total fenced area for the six sites. The BLM estimates that 39,311,000 acres (85 percent of BLM land) are open to OHV use. The amount of land removed from potential OHV use is less than a tenth of a percent of the total OHV-used land.

Mitigation Measures

No mitigation measures would be required.

3.2.1.9 Wild Horses / Burros

Existing Conditions

The Wild and Free-Roaming Horse and Burro Act of 1971 governs the management and protection of wild horses and burros. The purpose of the law is to ensure the preservation of animals and prevent undue competition between wild horses/burros and livestock and big game. The regulations governing the protection of wild horses and burros are codified in 43 CFR 4700.

Two Herd Management Areas (HMA) are near proposed PBO stations: Desatoya and Fish Creek. Site P069 would be southwest of the Desatoya HMA. Site P074 would be northeast of the Fish Creek HMA.

Effects of the Alternatives

Alternative 1: No-Action. The No-Action Alternative would have no impact on wild horses or burros.

Alternative 2: Install PBO Network. Pasture or allotment boundary fences could cause problems with wild horse distribution or use or range lands The fences could also prevent the horses and burros from accessing water sources. All sites would be fenced, including P069 and P074 near HMAs; however, the small size of the fenced area would not restrict the movement of the wild horses or block water sources. Wild horses may rub against the fences, but the fences would be installed per BLM guidelines (See Section 3.7) to prevent harm to wild horses and burros.

Mitigation Measures

No mitigation measures would be required.

3.2.1.10 Grazing Allotments

Existing Conditions

All of the proposed PBO stations would be located within existing grazing allotments. Sites P071 and P069 would be located in the South Smith Creek allotment. Site P002 would be located in the Gilbert Creek allotment. Site P073 would be located in the Willow Ranch allotments. Site P085 would be located in the Argenta allotment.

Effects of the Alternatives

Alternative 1: No-Action. The No-Action Alternative would have no impact on grazing.

Alternative 2: Install PBO Network. Only a small amount of land (0.17 m^2 or 1.9 ft^2) would be converted from multiple uses or grazing if the proposed PBO stations are installed but were unfenced. Six sites are proposed to be fenced, and 74 m^2 (800 ft^2) per site or a total of 444 m^2 or 0.04 ha (4,800 ft^2 or 0.11 ac) would be removed from grazing. Considering the size of the grazing allotments, the amount of land removed from grazing would not substantially alter the amount of forage available in any allotment.

Range animals may rub against the fences, but the fences would be installed per BLM guidelines (See Section 3.7) to prevent harm to range animals.

Mitigation Measures

No mitigation measures would be required.

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3.2.2 Carson City

Thirteen PBO stations and one data relay site are proposed on Carson Field Office land. There would be four short drill-braced monuments and nine deep drill-braced monuments. All 14 sites will be fenced.

3.2.2.1 Soils and Geology

Existing Conditions

Site-specific soil types and thicknesses and geologic (bedrock) conditions determine which type of CGPS installations would be used. Igneous bedrock is present at the surface for nine of the proposed PBO station sites with shallow to no soil at five of the sites. The soil associations present at the proposed PBO stations sites are Teguro-Colbar-Clevage Association, Piroutte-Osobb Association, Bukaroo-Watoopah-Rezave Association, Hawsley-Theon-Pirouette Association, Bedzee-Loomer-Bedwyr Association, Pinwater-Terlco Association, Advokay-Budihol-Pumel Association, Loomer–Doweyville–Rock Outcrop Association, Chill Association, Rockabin-Hiridge Association, Reno-Saralegui Association, Old Camp–Rock Outcrop Complex, Barnmot-Bluewing-Badland Association, and Acrelane–Rock Outcrop Complex.

Developing the PBO network would not require the excavation or use of local sand, gravel, or rock resources for installation. Seismic and volcanic activity are not a concern because these are the hazards that will be observed by the PBO network. Detailed reviews of the local geology and seismic setting were completed as part of designing the network configuration. No geologic hazards such as land slides, rock falls, or soil subsidence are present at any of the sites.

Effects of the Alternatives

Alternative 1: No-Action. The No-Action Alternative would have no direct impact on soils or geology. Because no PBO stations would be installed, there would be no surface or subsurface disturbance of soils or potential for construction-related erosion.

The No-Action Alternative, which consists of not installing the PBO network on Nevada BLM administered public land, would substantially limit the effectiveness of the PBO network. This would reduce the amount of in-depth knowledge of geology and seismic activity in Nevada.

Alternative 2: Install PBO Network. The PBO Network siting criteria (Appendix B) dictate that areas highly prone to soil erosion be avoided.

When the network is installed, limited surface and subsurface disturbance would occur during the one- to two-day construction period for each station as shown in Tables 3-2 and 3-3. Long-term impacts would be restricted to the area drilled for installation of the stainless steel legs and the foundation for the equipment mast.

A total of 13 PBO stations and one data relay station are proposed to be installed on lands managed by the Carson City Field Office. The temporary surface disturbance would be 4,760 m^2 or 0.48 ha (51,243 ft^2 or 1.18 ac) for the PBO stations and data relay site as shown in Table 3-3. Final installation would result in about 1,036 m^2 or 0.10 ha (11,200 ft^2 or 0.26 ac) of long-term disturbance including fences on all sites.

This minor amount of ground disturbance would not have any substantive impact on soils or geological resources. Areas disturbed during installation would be revegetated according to BLM guidelines.

Mitigation Measures

No mitigation measures would be required.

3.2.2.2 Transportation and Access

Existing Conditions

Transportation and access to any PBO site would be conducted on existing roads, both improved and unimproved. No new roadways would be constructed for the Proposed Action. Where installations are located some distance from an established roadway, final access to the site would be by foot, horse, ATV, or four-wheel-drive pickup truck.

Effects of the Alternatives

Alternative 1: No-Action. The No-Action Alternative would have no impact on transportation or access.

Alternative 2: Install PBO Network. Installation of short drill-braced monuments would typically involve transporting equipment and personnel using one four-wheel-drive pickup truck with a 4-m (14-ft) trailer. These monument types often would be installed in remote areas where existing roadways are narrow and unimproved. Proposed sites P099, P134, P136, and P139 would have short drill-braced monuments. The sites are 0 m (0 ft), 55 m

(180 ft), 53 m (175 ft), and 122 m (400 ft), respectively, from the nearest road. Due to the remoteness of these locations, there would be little or no traffic to obstruct.

Installation of deep drill-braced monuments would require two or three four-wheel-drive pickup trucks with 4-m (14-ft) trailers and one 18-wheel semi-truck to deliver the tracked drill rig. Because of the need for the drill rig, these monuments would be installed only in areas where roadways are wide enough and improved (that is, paved or graded and maintained) to a condition to accommodate the semi-truck. Roadways in these types of locations usually offer nearby pull-off sites where vehicles can be parked to avoid conflicts with passing traffic. The drill rig would be driven about 130 m (425 ft) to reach proposed site P068, 152 m (500 ft) to reach proposed sites P130, and 91 m (300 ft) to reach proposed site P132. The area of temporary impacts for driving the drill rig or pickup truck from the road to the proposed off-road sites would be 2,708 m^2 or 0.27 ha (28,800 ft^2 or 0.67 ac). Access to the remaining proposed sites would be from existing roads.

Maintenance activities would occur annually or, more likely, on a two- to five-year cycle. Maintenance inspections would involve one or two crew members visiting a site using one four-wheel-drive pickup truck. The final approach from the nearest road to the installed monuments would be on foot.

Impacts to transportation routes and access on BLM administered public land would be negligible and would not obstruct BLM administered public land or resources. Installation of the network would have a negligible impact on existing BLM roadways. The area temporarily disturbed by equipment accessing sites P068, P130, P132, P134, P136, and P139 would be revegetated to preconstruction conditions according to BLM guidelines.

Mitigation Measures

No mitigation measures would be required.

3.2.2.3 Air Quality

Existing Conditions

The Federal Clean Air Act (CAA) of 1970 and the Clean Air Act Amendments of 1990 require the U.S. Environmental Protection Agency (EPA) to adopt air quality standards and implement environmental policies that ensure cleaner air quality. The state of Nevada has set air quality standards for criteria pollutants that are generally based on the federal standards for air quality. Additionally, the Nevada State Environmental

Commission has established an air quality standard for hydrogen sulfide (Nevada 2002).

Areas where air quality exceeds the National Ambient Air Quality Standards (NAAQS) for criteria pollutants are called nonattainment areas, and states must develop plans for attaining and maintaining the NAAQS in these areas. Air quality in Nevada is generally good; however, there are two air basins that are considered nonattainment areas: Truckee Meadows and Las Vegas Valley. Truckee Meadows, which includes Reno, Sparks, and the Nevada side of the Lake Tahoe Basin, is in nonattainment for carbon monoxide and particulate matter.

In Nevada, the Bureau of Air Pollution Control (BAPC) requires a permit for source emissions, but a permit is not required if activities, equipment, or storage containers will not cause emissions other than steam or water particles. Washoe and Clark Counties also regulate source emissions in their respective counties. The BAPC maintains list of insignificant and trivial sources of air pollution. Mobile sources of emission are regulated under NRS 445B.700 –445B.834, which include vehicle inspections. The BAPC also regulates fugitive dust through surface area disturbance permits. Projects not related to agriculture that disturb more than 5 ac of surface area must obtain a surface area disturbance (SAD) permit and prepare a dust control plan (BAPC, no date).

In Washoe County, the Washoe County District Health Department Air Quality Management Division, in coordination with the Air Pollution Control Hearing Board, is required by federal law to permit and inspect stationary sources of air pollution for compliance with both the federal requirements and local air quality regulations. Major emitting facilities would include emissions of 100 tons/year. A dust control plan must be submitted to the County District Health Department if more than 1 ac of topsoil is altered, including removing vegetation (Washoe County 2005a, 2005b).

Effects of the Alternatives

Alternative 1: No-Action. The No-Action Alternative would have no impact on existing air quality.

Alternative 2: Install PBO Network. The proposed PBO stations would have no operational emissions, so no air quality impacts would occur from site operation.

Construction of short drill-braced monuments requires a generator-powered handheld rotary drill to penetrate bedrock (see Section 2.2.1.1). The handheld

rotary drill is powered by a clean-burning Honda EU2000i four-stroke generator. The generator is powered by a 3.5-horsepower, single-cylinder, overhead-cam, air-cooled gasoline engine. The unit uses inverter technology to provide 2,000 watts of power and runs up to 15 hours on a single tank (4.3 liters or 1.1 gallons) of gasoline. This drill would be operated during only part of the one-day construction period. Emissions would be short-term, intermittent, and negligible.

Construction of deep drill-braced monuments requires the use of a track-mounted drill rig (see Section 2.2.1.2). Exhaust emissions from the drill rig for the two-day installation period would have a negligible impact on air quality at the deep drill-braced sites. Two types of drills are commonly used: Komatsu PC 45 Excavator and Ingersoll Rand ECM 370. For hard-rock drilling, when a smaller track-mounted drill rig is used (Komatsu PC 45 Excavator), an additional high-pressure air compressor is sometimes used in conjunction with the track-mounted drill rig. The Ingersoll Rand P185WIR air compressor that is used is a 65-horsepower unit. The drilling equipment that UNAVCO would use falls under regulated mobile sources of emissions or is listed on the trivial emissions list (hand-held equipment and air compressors and pneumatically operated equipment, including hand tools, are considered trivial sources and are not monitored for air quality pollution by the State of Nevada). In Washoe County, these mobile sources are not specifically regulated by the Washoe County District Health Department Air Quality Management Division.

Due to the small area of disturbance (74 m^2 [800 ft^2] per short drill-braced PBO station and 495 m^2 [5,327 ft^2] per deep drill-braced PBO station) where construction activities would occur and the short duration of the construction period (one to two days) for each site, fugitive dust emissions from construction activities would be negligible. Installation of all 13 PBO stations and one data relay site would disturb 4,760 m^2 or 0.47 ha (51,243 ft^2 or 1.16 ac) for construction of all of the CGPS monuments. A SAD permit and a dust control plan would not be required because the area of disturbance would be less than 5 ac. For sites P090 and P139, which are in Washoe County, a dust control plan would not be needed because the area of disturbance would be less than 1 ac per site.

Because no emissions would be produced during operation of the CGPS sites and the disturbance would occur in dispersed sites on Carson City Field Office land and in different time periods for one to two days, the installation of PBO stations under Alternative 2 would have a negligible effect on air quality.

Mitigation Measures

No mitigation measures would be required.

3.2.2.4 Noise

Existing Conditions

The unit used to describe the intensity of sound is the decibel (dB). The A-weighted decibel, denoted as dB(A), is the unit of noise measurement used in most noise ordinances and standards. For a frame of reference, the threshold of hearing is 0 dB(A), an air conditioner at 6 m (20 ft) is 60 dB(A), and an auto horn at 1 m (3 ft) is 120 dB(A) (CEQ 1970).

The Noise Control Act of 1972 and its subsequent amendments (Quiet Communities Act of 1978 [42 U.S.C. Parts 4901 – 4918]) delegate authority to regulate environmental noise to the states and direct government agencies to comply with local community noise statutes and regulations (EPA 1974). In Nevada, Nevada Revised Statutes (NRS) 244.363 gives counties the authority to enact noise ordinances to regulate, control, and prohibit excessive noise that is injurious to health or interferes with the enjoyment of life or property within the county. Typical levels of acceptable noise are tied to land use and range from 60 dB(A) (residential) to 75 dB(A) (industrial) day-night average sound levels (L_{dn}).

Effects of the Alternatives

Alternative 1: No-Action. The No-Action Alternative would have no impact on ambient noise levels.

Alternative 2: Install PBO Network. Once installed, the proposed PBO stations would not emit any discernible operational noise. Construction noise would be limited to the one or two days required for equipment installation.

To install the CGPS units, handheld rotary drills and track-mounted drills would be used. The handheld rotary drill is powered by a Honda EU2000i four-stroke generator. These 3.5-horsepower, single-cylinder engines are totally enclosed and produce 59 dB(A) of sound at 7 m (23 ft) under a full load, which is less than the noise level of everyday speech. The track-mounted drill (Ingersoll Rand ECM 370) produces noise levels that range from 85 dB(A) at 16 m (42 ft) behind the drill to 92 dB(A) at 10 m (33 ft) in front of the drill (Ingersoll Rand 1990). Sometimes an additional high-pressure compressor unit would be used with the track-mounted drill for hard-rock drilling. The high-pressure compressor unit produces 76 dB(A) of sound at 7 m (23 ft) (Ingersoll Rand 2005).

The PBO stations on the Carson City Field Office lands would not be near sensitive noise receptors (such as residences, schools, or hospitals), as dictated by the PBO Network siting criteria (Appendix B). The noise impacts of construction would be intermittent during the one- to two-day construction period. No construction would occur during nighttime hours. For these reasons, the Proposed Action is not expected to have any substantive noise impact.

Mitigation Measures

No mitigation measures would be required.

3.2.2.5 Biological Resources

Existing Conditions

The Proposed Action would be located in a variety of habitats throughout the ecoregions of Nevada (Bailey 1995). Ecoregions potentially affected by the Proposed Action include the Intermountain Semidesert and Desert Province (341) and the Intermountain Semidesert Province (342). The Intermountain Semidesert Province is dominated by sagebrush or shadscale mixed with short grasses. In the alkaline areas, greasewood is often present. Large mammals present include coyote, pronghorn antelope, mountain lion, and bobcat. Smaller mammals include ground squirrel, white-tailed prairie dog, deer mouse, white-tailed jack rabbit, and porcupine. The region supports breeding and resting grounds for migrating waterfowl. Sage grouse are abundant in the uplands. Raptors such as ferruginous hawk, rough-legged hawk, and burrowing owl are also found in the area. Sites for proposed PBO stations P090 and P139 are found in this ecoregion.

The remaining sites are found in the Intermountain Semidesert and Desert Province, which is characterized by interior basins between the steep mountains that rise from the plains. The vegetation is dominated by sagebrush at the lower elevations but also includes antelope bitterbrush, shadscale, fourwing saltbush, rubber rabbitbrush, spiny hopsage, horsebrush, and Gambel oak. The woodland zone is dominated by juniper and pinyon pine with the upper elevations dominated by sparse conifer forests. There are few large mammals except pronghorn antelope, and smaller mammals such as white-tailed prairie dog, ground squirrels, jack rabbits, kangaroo mice, and kit foxes are inhabitants of this ecoregion. Burrowing owls, sage thrasher, sage grouse, American kestrel, and golden eagles can also be found (Bailey 1995).

Consistent with the ecoregion description for the area, nearly all of the proposed sites are dominated by sagebrush (P068, P128, P129, P130, P131, P132, P133, P135, and P136). The sagebrush cover is denser at some sites where the soil is deeper and less rocky. Site P090 has very sparse vegetation because the area has been used by OHVs. Sites P139, P099, P136, and P134 are largely on rock outcrops with limited vegetation, although site P136 has denser mixed woody vegetation including sagebrush and greasewood.

No federal or state threatened or endangered species or sensitive species were reported occur at any of the proposed PBO station sites on Carson City Field Office land. According to a communication with temporary realty specialist Dave Parker of BLM Carson City Field Office (July 6, 2005), no biological surveys would be needed.

Effects of the Alternatives

Alternative 1: No-Action. The No-Action Alternative would have no impact on existing vegetation.

Alternative 2: Install PBO Network. Short drill-braced monuments are installed using a handheld rotary drill and other equipment that can be hand carried, packed on animals, delivered by helicopter, or driven by vehicle over four-wheel-drive roads. These installations would be low impact and would require about 74 m^2 (800 ft^2) of ground disturbance during construction. Installation time would be about one day. Long-term ground disturbance would be restricted to the 0.17 m^2 (1.9 ft^2) area drilled for the monument legs and equipment mast foundation (refer to Table 3-2).

Installing deep drill-braced monuments would disturb vegetation during construction. Monument installation requires a track-mounted drill rig to maneuver in an area about 18 m (60 ft) in diameter around the proposed monument location. The track-mounted drill rig would be delivered using a semi-truck and then driven the final distance to the installation location. See Section 3.2.2.2, Transportation Access, for more information. Installation time would be about two days. Similar to the short drill-braced monument, long-term ground disturbance would be restricted to the 0.17 m^2 (1.9 ft^2) area drilled for the monument legs and equipment mast foundation.

Impacts from construction activities would be short term. Vegetation would be cut and crushed, but the area of disturbance would be minor and plant roots and crowns would remain intact. Crushing or cutting vegetation will be avoided as much as possible. Vegetation is expected to re-establish in the short term depending on the location and amount of rainfall. The long-term impact area for a PBO station is small (0.17 m^2 or 1.9 ft^2); therefore, the

existing vegetation would remain relatively intact and should recover. Any required revegetation would be completed according to BLM guidelines. Non-woody vegetation would be able to grow freely throughout the installation.

Installation of all 13 PBO stations and one data relay site on Carson City Field Office land would disturb a total of 4,760 m^2 or 0.47 ha (51,243 ft^2 or 1.16 ac). The long-term impacts would encompass 1,036 m^2 or 0.10 ha (11,200 ft^2 or 0.26 ac) including the fences at each of the PBO stations. Because construction impacts would be short in duration and would not remove the vegetation, and because the vegetation could continue to grow over the long term at all sites including those with fences, the Proposed Action would result in very minor long-term impacts to vegetation.

Mitigation Measures

No mitigation measures would be required.

3.2.2.6 Cultural Resources

Existing Conditions

Section 106 of the National Historic Preservation Act of 1966, as amended and 36 CFR 800, the implementing code, requires that districts, sites, buildings, structures or objects that are included on or are eligible for the for inclusion on the National Register of Historic Places be taken into account before a federal action is undertaken. Class III cultural resource surveys were completed by Kautz Environmental Consultants, Inc. (KEC) to determine if cultural resources were present at any of the proposed PBO stations. One-acre surveys were completed around the 13 proposed PBO stations, around the one data relay station, and along the access roads to the PBO stations. The surveys were completed in October 2005.

Effects of the Alternatives

Alternative 1: No-Action. The No-Action Alternative would have no impact on cultural resources.

Alternative 2: Install PBO Network. The PBO network siting criteria (Appendix B) dictate that the following areas and resources be avoided:

- Cultural resources listed or determined to be eligible for listing on the National Register of Historic Places.

- Resources and locations determined to have importance to the free expression or practice of the Native American religion, in accordance with the American Indian Religious Freedom Act.
- Areas that contain cultural resources of value at the state or local level but which are not considered eligible for National Register listing (for example, cultural properties listed on state or local registers or identified by state historians, state archaeologists, or other appropriate state and local agency personnel).

The archeological sites were determined not eligible for the NRHP or would not be impacted by the proposed PBO stations. Four sites have been identified as being in the vicinity of cultural resources.

Mitigation Measures

The presence of a cultural resource monitor at four specific sites during initial surface disturbing activities would mitigate the potential for damage to cultural resources.

3.2.2.7 Visual Resources

Existing Conditions

Visual resources refer to all visible objects and features on a landscape (i.e., man-made and natural landforms whether moving or stationary). Because these resources contribute to and define the scenic or visual quality of the landscape, BLM is required to manage visual resources in such a manner to protect the quality of scenic values. BLM has established methods for visual resource planning and assessing visual resource impacts (BLM 1986). There are no Class I Visual Resource Management (VRM) areas in the Carson City Field Office jurisdiction (Carson City RMP 2001). The proposed PBO stations would not be located in Class II VRM areas but would be located in Class III and IV VRM areas. Class III areas retain or partially retain, respectively, the existing character of the landscape. Class IV areas allow for major modification to the character of the landscape.

Effects of the Alternatives

Alternative 1: No-Action. The No-Action Alternative would have no impact on visual quality.

Alternative 2: Install PBO Network. The PBO network siting criteria (Appendix B) dictate that areas designated as scenic highways, natural landmarks, or areas with visual concerns be avoided.

Minor visual impacts would result from the presence of vehicles and the disturbance of soils during installation of the PBO stations. These temporary impacts would be minor because construction is of such short duration (one to two days) and construction involves very few vehicles and a small area of soil disturbance.

Generally, the CGPS equipment would be seen by a few motorists, hikers, climbers, and back-country tourists at close range to the installation, which would have a minor impact on the visual quality of the area. For specific sites, this impact would be lessened by surrounding land uses. For example, the site for PBO station P135R would be just downhill from the communication tower on Bald Mountain. The CGPS equipment at this site is smaller than the existing communication tower, so it would not disrupt the visual quality of the site. Site P090 would sit below a rock outcrop and would not be visible from a distance. However, because the site would be located in an area used by OHVs (based on tracks observed), the site would likely be visible to OHV users. Site P136 would be on a hill top but is surrounded by large boulders and larger woody vegetation that would prevent the CGPS equipment from being seen. Site P129 would be located near a pipeline road. As with many of the other sites including P068, P135, P131, P128, and P139, the rolling topography would help shield site P129 from middle-distance or long-distance views. From the proposed location of site P128, a viewer could see Lahontan State Park in the far distance, but a user of the park would not see the CGPS equipment. Other sites would have fewer topographic features to shield views of the equipment (P135, P133, and P132), but the equipment would blend in with the gray and silver sagebrush. Three sites (P099, P130, and P134) would be located on hills, but the small-scale CGPS equipment would not be visible at any large distance from the PBO stations, even if the equipment is sitting on the hill top.

All PBO stations would be fenced with large-gauge steel mesh to protect the CGPS equipment. Therefore, fences would not block views or introduce any visually dominant features into the landscape. Additionally, as specified in Section 3.7, the fence will be painted brown.

For these reasons, impacts from the Proposed Action on the visual quality of the landscape are expected to be minor and consistent with the designated VRM classes III & IV, which allow minor modifications in the landscape.

Mitigation Measures

No mitigation measures would be required.

3.2.2.8 Recreation/Visitor Services

Existing Conditions

The Carson City Field Office manages several types of recreation areas and specially designated areas. The proposed PBO stations were sited to avoid these specially designated areas.

There also are many opportunities for visitors on Carson City Field Office land, dispersed recreation opportunities such as riding OHVs are also available that rely on a person's own skills, knowledge, and equipment to recreate. This type of recreation is generally unrestricted on the Carson City Field Office lands except in areas that are more intensively managed for specific types of recreation.

Effects of the Alternatives

Alternative 1: No-Action. The No-Action Alternative would have no impact on recreation or visitor services.

Alternative 2: Install PBO Network. The PBO network siting criteria (Appendix B) dictate that areas in national and state parks and designated recreational areas must be avoided. No PBO stations would be located within the recreation areas noted above in the Existing Conditions section. The PBO stations would be located in areas that could potentially be used for OHVs. Installation of 13 PBO stations and one data relay site on lands managed by the Carson City Field Office (see Table 3-3) would remove 1,036 m^2 or 0.10 ha (11,200 ft^2 or 0.26 ac) from OHV use. These long-term impacts include the total fenced area for the 14 sites. The BLM estimates that 39,311,000 acres (85 percent of BLM land) are open to OHV use. The amount of land removed from potential OHV use is less than a tenth of a percent of the total OHV-used land.

Mitigation Measures

No mitigation measures would be required.

3.2.2.9 Wild Horses / Burros

Existing Conditions

Two Herd Management Areas (HMA) are near proposed PBO stations: Horse Mountain and Wassuck. Site 135R would be east of the Wassuck HMA. Site P130 would be northwest of the Horse Mountain HMA.

Effects of the Alternatives

Alternative 1: No-Action. The No-Action Alternative would have no impact on wild horses or burros.

Alternative 2: Install PBO Network. Both site P135R and P130 would be fenced; however, the small size of the fenced areas would not restrict the movement of the wild horses or block water sources.

Mitigation Measures

No mitigation measures would be required.

3.2.2.10 Grazing Allotments

Existing Conditions

All of the proposed PBO stations would be located within existing grazing allotments. In Washoe County, sites P139 and P090 would be located in the Paiute and Wedkind allotments, respectively. Sites P096, P128, P130, P129, P099, and P068 in Churchill County would be located in the Desert Green, Truckee-Virginia, Horse Mountain, Labeau Flat, Clan Alpine, and Dixie Valley allotments, respectively. Site P131 would be located in the Mountain Well allotment and site P136 would be located in the Spring Gulch allotment. Site P135 would be located in the Gray Hills allotment. Sites P134 and P135R in Mineral County would be located in the Perry Spring–Deadman and Butler Mountain allotments, respectively.

Effects of the Alternatives

Alternative 1: No-Action. The No-Action Alternative would have no impact on grazing.

Alternative 2: Install PBO Network. Only a small amount of land (0.17 m^2 or 1.9 ft^2) would be converted from multiple uses if the proposed PBO stations are installed. However, all sites on Carson City Field Office land would be fenced at the request of BLM. Fenced sites would remove 74 m^2 or 0.007 ha (800 ft^2 or 0.02 ac) per site for a total of 1,036 m^2 or 0.10 ha (11,200 ft^2 or 0.26 ac) removed from grazing. Considering the size of the grazing allotments, the amount of land removed from grazing would not substantially alter the amount of forage available in any allotment.

Mitigation Measures

No mitigation measures would be required.

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3.2.3 Elko

Two PBO stations are proposed on Elko Field Office land. One proposed PBO station (P007) would be a deep drill-braced monument and the other PBO station (P087R) would be a short drill-braced monument. The deep drill-braced monument would be fenced.

3.2.3.1 Soils and Geology

Existing Conditions

Site-specific soil types and thicknesses and geologic (bedrock) conditions determine which type of CGPS installations would be used. Sedimentary and igneous bedrock is present at the surface for the proposed deep drill-braced monument site and igneous bedrock is present at the proposed short drill-braced monument site with shallow or no soil at both sites. The soil associations present for the proposed PBO stations are Zapa-Izar-Shalper Association for the deep drill-braced monument and Decram–Decram Variant–Duff Association for the short drill-braced monument.

Developing the PBO network would not require the excavation or use of local sand, gravel, or rock resources for installation. Seismic and volcanic activity are not a concern because these are the hazards that will be observed by the PBO network. Detailed reviews of the local geology and seismic setting were completed as part of designing the network configuration. No geologic hazards such as land slides, rock falls, or soil subsidence are present at any of the proposed sites.

Effects of the Alternatives

Alternative 1: No-Action. The No-Action Alternative would have no direct impact on soils or geology. Because no PBO stations would be installed, there would be no surface or subsurface disturbance of soils or potential for construction-related erosion.

The No-Action Alternative, which consists of not installing the PBO network on Nevada BLM administered public land, would substantially limit the effectiveness of the PBO network. This would reduce the amount of in-depth knowledge of geology and seismic activity in Nevada.

Alternative 2: Install PBO Network. The PBO network siting criteria (Appendix B) dictate that areas highly prone to soil erosion be avoided.

When the network is installed, limited surface and subsurface disturbance would occur during the one- to two-day construction period for each station as shown in Tables 3-2 and 3-3. Long-term impacts would be restricted to the area drilled for installation of the stainless steel legs and the foundation for the equipment mast.

Two PBO stations would be installed on lands managed by the Elko Field Office. The total temporary surface disturbance would be 569 m^2 or 0.06 ha (6,127 ft^2 or 0.14 ac) for the two stations as shown in Table 3-3. Final installation would result in about 74 m^2 or 0.007 ha (800 ft^2 or 0.02 ac) of long-term disturbance, including fencing of the deep drill-braced monument site.[2]

The minor amount of ground disturbance would not have any substantive impact on soils or geological resources. Areas disturbed during installation would be revegetated according to BLM guidelines.

Mitigation Measures

No mitigation measures would be required.

3.2.3.2 Transportation and Access

Existing Conditions

Transportation and access to any PBO site would be conducted on existing roads, both improved and unimproved. No new roadways would be constructed for the Proposed Action. Where installations are located some distance from an established roadway, final access to the site would be by foot, horse, ATV, or four-wheel-drive pickup truck.

Effects of the Alternatives

Alternative 1: No-Action. The No-Action Alternative would have no impact on transportation or access.

Alternative 2: Install PBO Network. Installation of the short drill-braced monument would involve transporting equipment and personnel using one four-wheel-drive pickup truck with a 4-m (14-ft) trailer. The site would be installed in a remote area where existing roadways are narrow and unimproved. Due to the remoteness of the location, there would be little or no

[2] The area used by the fence (74 m^2 or 800 ft^2) would have less soil impact than the total area that would be enclosed by the fence.

traffic to obstruct. Proposed site P087R would be 134 m (440 ft) from the road and the final approach to the site would be by foot.

Installation of the deep drill-braced monument would require two or three four-wheel-drive pickup trucks with 4-m (14-ft) trailers and one 18-wheel semi-truck to deliver the tracked drill rig. For site P007, the drill rig would be driven about 52 m (170 ft) from the dirt road to reach the proposed site. The area of temporary impacts for driving the rig from the road would be 41 m^2 or 0.004 ha (2,040 ft^2 or 0.01ac).

Maintenance activities would occur annually or, more likely, on a two- to five-year cycle. Maintenance inspections would involve one or two crew members visiting a site using one four-wheel-drive pickup truck. The final approach from the nearest road to the installed monuments would be on foot.

Impacts to transportation and access on BLM administered public land would be negligible and would not obstruct BLM administered public land or resources. Installation of the network would have a negligible impact on existing BLM roadways. The area temporarily disturbed by equipment accessing site P007 would be revegetated to preconstruction conditions according to BLM guidelines.

Mitigation Measures

No mitigation measures would be required.

3.2.3.3 Air Quality

Existing Conditions

The Federal Clean Air Act (CAA) of 1970 and the Clean Air Act Amendments of 1990 require the U.S. Environmental Protection Agency (EPA) to adopt air quality standards and implement environmental policies that ensure cleaner air quality. Standards were established to protect public health, safety, and welfare from known or anticipated adverse effects of several criteria pollutants: sulfur dioxide (SO_2), particulate matter under 10 microns (PM_{10}), particulate matter under 2.5 microns ($PM_{2.5}$), carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), and lead (Pb). The state of Nevada has set air quality standards for criteria pollutants that are generally based on the federal standards for air quality. The Nevada State Environmental Commission has also established an air quality standard for hydrogen sulfide (State of Nevada 2002).

Areas where air quality exceeds the National Ambient Air Quality Standards (NAAQS) for criteria pollutants are called nonattainment areas, and states

must develop plans for attaining and maintaining the NAAQS in these areas. These plans generally include emissions reduction measures, such as limitations on stationary source emissions, and work practice standards. There are no nonattainment areas in the Elko Field Office jurisdiction.

In Nevada, the Bureau of Air Pollution Control (BAPC) requires a permit for source emissions, but a permit is not required if activities, equipment, or storage containers will not cause emissions other than steam or water particles. The BAPC maintains list of insignificant and trivial sources of air pollution, which include hand-held equipment, air compressors, and pneumatically operated equipment. Mobile sources of emission are regulated under NRS 445B.700 445B.834, which include vehicle inspections. The BAPC also regulates fugitive dust through surface area disturbance permits. Projects not related to agriculture that disturb more than 5 ac of surface area must obtain a surface area disturbance (SAD) permit and prepare a dust control plan (BAPC, no date).

Effects of the Alternatives

Alternative 1: No-Action. The No-Action Alternative would have no impact on existing air quality.

Alternative 2: Install PBO Network. The proposed PBO stations would have no operational emissions, so no air quality impacts would occur from site operation.

Construction of the short drill-braced monument requires a generator-powered handheld rotary drill to penetrate bedrock (see Section 2.2.1.1). The handheld rotary drill is powered by a clean-burning Honda EU2000i four-stroke generator. The generator is powered by a 3.5-horsepower, single-cylinder, overhead-cam, air-cooled, gasoline engine. The unit uses inverter technology to provide 2,000 watts of power and runs up to 15 hours on a single tank (4.3 liters or 1.1 gallons) of gasoline. This drill would be operated during only part of the one-day construction period. Emissions would be short-term, intermittent, and negligible.

Construction of the deep drill-braced monument requires the use of a track-mounted drill rig (see Section 2.2.1.2). Exhaust emissions from the drill rig for the two-day installation period would have a negligible impact on air quality at the deep drill-braced site. Two types of drills are commonly used: Komatsu PC 45 Excavator and Ingersoll Rand ECM 370. For hard-rock drilling, when a smaller track-mounted drill rig is used (Komatsu PC 45 Excavator), an additional high-pressure air compressor is sometimes used in conjunction with the track-mounted drill rig. The Ingersoll Rand P185WIR

air compressor that is used is a 65-horsepower unit. The drilling equipment that UNAVCO would use falls under regulated mobile sources of emissions or is listed on the trivial emissions list (hand-held equipment and air compressors and pneumatically operated equipment, including hand tools, are considered trivial sources and are not monitored for air quality pollution by the State of Nevada).

Due to the small area of disturbance (74 m^2 [800 ft^2] for proposed PBO station P007) where construction activities would occur and the short duration of the construction period (one to two days) for the site, fugitive dust emissions from construction activities would be negligible. Installation of the proposed PBO stations would disturb 569 m^2 or 0.06 ha (6,127 ft^2 or 0.14 ac) for construction of all of the CGPS monuments. A SAD permit and a dust control plan would not be required because the area of disturbance would be less than 5 ac.

Because no emissions would be produced during operation of the CGPS sites and the disturbance would occur in dispersed sites on Elko Field Office land and in different time periods for one to two days, the installation of PBO stations under Alternative 2 would have a negligible effect on air quality.

Mitigation Measures

No mitigation measures would be required.

3.2.3.4 Noise

Existing Conditions

The unit used to describe the intensity of sound is the decibel (dB). The A-weighted decibel scale approximates the range of human hearing by filtering out lower-frequency noises, which are less damaging than higher-frequency noises. The A-weighted decibel, denoted as dB(A), is the unit of noise measurement used in most noise ordinances and standards. For a frame of reference, the threshold of hearing is 0 dB(A), an air conditioner at 6 m (20 ft) is 60 dB(A), and an auto horn at 1 m (3 ft) is 120 dB(A) (CEQ 1970).

The Noise Control Act of 1972 and its subsequent amendments (Quiet Communities Act of 1978 [42 U.S.C. Parts 4901 – 4918]) delegate authority to regulate environmental noise to the states and direct government agencies to comply with local community noise statutes and regulations (EPA 1974). In Nevada, Nevada Revised Statutes (NRS) 244.363 gives counties the authority to enact noise ordinances to regulate, control, and prohibit excessive noise that is injurious to health or interferes with the enjoyment of

life or property within the county. Typical levels of acceptable noise are tied to land use and range from 60 dB(A) (residential) to 75 dB(A) (industrial) day-night average sound levels (L_{dn}).

Effects of the Alternatives

Alternative 1: No-Action. The No-Action Alternative would have no impact on ambient noise levels.

Alternative 2: Install PBO Network. Once installed, the proposed PBO stations would not emit any discernible operational noise. Construction noise would be limited to the one or two days required for equipment installation.

To install the CGPS units, handheld rotary drills and track-mounted drills would be used. The handheld rotary drill is powered by a Honda EU2000i four-stroke generator. These 3.5-horsepower, single-cylinder engines are totally enclosed and produce 59 dB(A) of sound at 7 m (23 ft) under a full load, which is less than the noise level of everyday speech. The track-mounted drill (Ingersoll Rand ECM 370) produces noise levels that range from 85 dB(A) at 16 m (42 ft) behind the drill to 92 dB(A) at 10 m (33 ft) in front of the drill (Ingersoll Rand 1990). Sometimes an additional high-pressure compressor unit is used with the track-mounted drill for hard-rock drilling. The high-pressure compressor unit produces 76 dB(A) of sound at 7 m (23 ft) (Ingersoll Rand 2005).

The PBO stations on the Elko Field Office lands would not be near sensitive noise receptors (such as residences, schools, or hospitals), as dictated by the PBO Network siting criteria (Appendix B). The noise impacts of construction would be intermittent during the one- to two-day construction period. No construction would occur during nighttime hours. For these reasons, the Proposed Action is not expected to have any substantive noise impact.

Mitigation Measures

No mitigation measures would be required.

3.2.3.5 Biological Resources

Existing Conditions

The Proposed Action would be located in a variety of habitats throughout the ecoregions of Nevada (Bailey 1995). Ecoregions potentially affected by the Proposed Action include the Intermountain Semidesert and Desert Province (341) and the Intermountain Semidesert Province (342). The Intermountain

Semidesert Province is dominated by sagebrush or shadscale mixed with short grasses. In the alkaline areas, greasewood is often present. The proposed site for PBO station P007 is found in this ecoregion. Large mammals present include coyote, pronghorn antelope, mountain lion, and bobcat. Smaller mammals include ground squirrel, white-tailed prairie dog, deer mouse, white-tailed jack rabbit, and porcupine. The region supports breeding and resting grounds for migrating waterfowl. Sage grouse are abundant in the uplands. Raptors such as ferruginous hawk, rough-legged hawk, and burrowing owl are also found in the area. There are sage grouse leks (strutting grounds) about 1 mi north of the proposed site (Nelson 2005).

The proposed site for PBO station P087R is found in the Intermountain Semidesert and Desert Province, which is characterized by interior basins between the steep mountains that rise from the plains. The vegetation is dominated by sagebrush at the lower elevations but also includes antelope bitterbrush, shadscale, fourwing saltbush, rubber rabbitbrush, spiny hopsage, horsebrush, and Gambel oak. The woodland zone is dominated by juniper and pinyon pine with the upper elevations dominated by sparse conifer forests. There are few large mammals except pronghorn antelope, and smaller mammals such as white-tailed prairie dog, ground squirrels, jack rabbits, kangaroo mice, and kit foxes are inhabitants of this ecoregion. Burrowing owls, sage thrasher, sage grouse, American kestrel, and golden eagles can also be found (Bailey 1995).

Consistent with the ecoregion description for the area, the sagebrush cover at sites P087R and P007 is very sparse and low-growing.

No federal or state threatened or endangered species or sensitive species were reported to occur at any of the proposed PBO station sites on Elko Field Office land. No biological issues were identified by the Field Office biologist (Nelson 2005) because installation would occur before April 15 or after July 31 to avoid impacts to migratory birds and to comply with Executive Order 13186, Responsibilities of Federal Agencies To Protect Migratory Birds.

Effects of the Alternatives

Alternative 1: No-Action. The No-Action Alternative would have no impact on existing vegetation.

Alternative 2: Install PBO Network. The short drill-braced PBO station would be installed using a hand-held rotary drill and other equipment that can be hand carried, packed on animals, or driven by vehicle over four-wheel-drive roads. Short drill-braced installations are low impact and require only about 74 m^2 (800 ft^2) of ground disturbance during construction. Installation

time is about one day. Long-term ground disturbance is restricted to the 0.17 m^2 (1.9 ft^2) area drilled for the monument legs and equipment mast foundation (refer to Table 3-2).

Installing deep drill-braced monuments would disturb vegetation during construction. Monument installation requires a track-mounted drill rig to maneuver in an area about 18 m (60 ft) in diameter around the proposed monument location. The area disturbed by construction would be 263 m^2 (2,827 ft^2). The track-mounted drill rig would be delivered using a semi-truck and then driven the final distance to the installation location. See Section 3.2.3.2, Transportation Access, for more information. Any disturbance to vegetation from the drill rig will be revegetated to preconstruction conditions. Installation time would be about two days. Long-term ground disturbance would be restricted to the 0.17 m^2 (1.9 ft^2) area drilled for the monument legs and equipment mast foundation.

Impacts from construction activities would be short term. Vegetation would be cut and crushed, but the area of disturbance would be minor and plant roots and crowns would remain intact. Crushing or cutting vegetation will be avoided as much as possible. Vegetation is expected to re-establish in the short term depending on the location and rainfall received. The long-term impact area for a PBO station is small (0.17 m^2 or 1.9 ft^2); therefore, the existing vegetation would remain relatively intact and should recover. Any required revegetation would be completed according to BLM guidelines. Non-woody vegetation would be able to grow freely throughout the installation.

Installation of the proposed PBO stations on Elko Field Office lands would disturb a total of 569 m^2 or 0.06 ha (6,127 ft^2 or 0.14 ac). Disturbed areas would be seeded with native perennial grass seed mixes, if requested by BLM. The long-term impacts would encompass 74 m^2 or 0.007 ha (800 ft^2 or 0.02 ac). Because construction impacts would be short in duration and would not remove the vegetation, and because the long-term impacts would be less than 0.02 ac including one fenced site where vegetation could continue to grow, the Proposed Action would result in very minor long-term impacts to vegetation.

Although sage grouse are in the area, they would not be impacted by the Proposed Action because the leks are far enough away from the proposed PBO stations that they would not be disturbed.

Mitigation Measures

No mitigation measures would be required.

3.2.3.6 Cultural Resources

Existing Conditions

Section 106 of the National Historic Preservation Act of 1966, as amended and 36 CFR 800, the implementing code, requires that districts, sites, buildings, structures or objects that are included on or are eligible for the for inclusion on the National Register of Historic Places be taken into account before a federal action is undertaken. Class III surveys cultural resource were completed by Kautz Environmental Consultants, Inc. (KEC) to determine if cultural resources were present at any of the proposed PBO stations. One-acre surveys were completed around the proposed PBO stations and along the access roads to the PBO stations. The surveys were completed in October 2005.

Two isolated historic features/artifacts were the only cultural resources found during the inventories. These include a machine-dug mining exploration trench and a tin can. Neither qualifies for listing on the National Register of Historic Places. Inventory reports BLM1-2494(P) and BLM1-2495(P) for the projects were filed with the Elko Field Office.

Effects of the Alternatives

Alternative 1: No-Action. The No-Action Alternative would have no impact on cultural resources.

Alternative 2: Install PBO Network. The PBO network siting criteria (Appendix B) dictate that the following areas and resources be avoided:

- Cultural resources listed or determined to be eligible for listing on the National Register of Historic Places.
- Resources and locations determined to have importance to the free expression or practice of the Native American religion, in accordance with the American Indian Religious Freedom Act.
- Areas that contain cultural resources of value at the state or local level but which are not considered eligible for National Register listing (for example, cultural properties listed on state or local registers or identified by state historians, state archaeologists, or other appropriate state and local agency personnel).

No prehistoric or historic cultural resources were found and recorded for the proposed PBO stations. No cultural resources would be impacted by the installation of the PBO stations.

Mitigation Measures

No mitigation measures would be required.

3.2.3.7 Visual Resources

Visual resources refer to all visible objects and features on a landscape (i.e., man-made and natural landforms whether moving or stationary). Because these resources contribute to and define the scenic or visual quality of the landscape, BLM is required to manage visual resources in such a manner to protect the quality of scenic values. BLM has established methods for visual resource planning and assessing visual resource impacts (BLM 1986).

Effects of the Alternatives

Alternative 1: No-Action. The No-Action Alternative would have no impact on visual quality.

Alternative 2: Install PBO Network. The PBO network siting criteria (Appendix B) dictate that areas designated as scenic highways, natural landmarks, or areas with visual concerns be avoided.

Minor visual impacts would result from the presence of vehicles and the disturbance of soils during installation of the PBO stations. These temporary impacts would be minor because construction is of such short duration (one to two days) and construction involves very few vehicles and a small area of soil disturbance.

Generally, the CGPS equipment would be seen by a few motorists, hikers, climbers, and back-country tourists at close range to the installation, which would have a minor impact on the visual quality of the area. For site P087R, the Morelli Mine would be in the area but would not be visible from the proposed station locations. Site P007 would be on generally flat topography with hills and mountains observable in the far distance. The vegetation at this site is low-growing and would not help shield the CGPS equipment from view. Site P087R would be located along the Cortez Mountain ridgeline. The site would not be visible to hikers on foot until they are near the site. Because of the height and small scale of the equipment, the PBO station would not be visible from adjacent ridgelines. Both sites would be in areas that are grazed.

Site P007 will be fenced to protect the CGPS equipment. The PBO station will be fenced with large-gauge steel mesh. The fence would not block views or introduce any visually dominant features into the landscape.

For these reasons, impacts from the Proposed Action on the visual quality of the landscape are expected to be minor and consistent with the designated VRM Class.

Mitigation Measures

No mitigation measures would be required.

3.2.3.8 Recreation/Visitor Services

Existing Conditions

A variety of recreational areas are managed by the Elko Field Office including archeological sites, reservoirs, and natural areas. Within the Elko District there are many ghost towns and mining camps, wagon and stage trails, old army forts, and cemeteries (Elko RMP). Ruby Marsh Campground and South Ruby Marsh and Tabor Creek are undeveloped recreation areas in the Wells Resources Area (Wells RMP).

Goshute Canyon and Goshute Cave allow hikers access to a bristlecone pine forest and limestone formations. The Goshute Mountain Watchable Wildlife Area gives birdwatchers the opportunity to view thousands of raptors as they pass through the area during fall migration. Salmon Falls Creek Recreation Area, South Fork Canyon Recreation Management Area, and South Fork Owyhee River Recreation Management Area provide opportunities and access to river rafting and kayaking. North Wildhorse Recreation Area and Wilson Reservoir Recreation Management Area provide fishing and boating activities in addition to camping facilities. Zunio/Jiggs Reservoir Recreation Management Area provides primitive camping, hiking, and photography opportunities, but the reservoir is often dry during drought years (Recreation.gov 2004).

Although there are many opportunities for visitors on Elko Field Office land, dispersed recreation opportunities such as riding OHVs, horseback riding, and hunting are also available (Elko RMP). There are also excellent deer hunting opportunities as about half of the state's deer population is either located in the area or moves through the area to its winter range. Deer hunters are widely dispersed among the accessible areas and camps located along streams with tree cover. The Elko resource area is an important sage hen hunting area. OHV use in the area is dispersed and usually occurs in

conjunction with hunting and fishing activities. Intensive OHV use occurs within about a 2-mile radius of population centers such as Jackpot, Wells, Wendover, and Elko (Wells RMP).

Effects of the Alternatives

Alternative 1: No-Action. The No-Action Alternative would have no impact on recreation or visitor services.

Alternative 2: Install PBO Network. The PBO Network siting criteria (Appendix B) dictate that areas in national and state parks and designated recreational areas must be avoided. No PBO stations would be located within the developed recreation areas noted above in the Existing Conditions section. The PBO stations would be located in areas that could potentially be used for OHVs and hunting. Installation of the PBO stations on lands managed by the Elko Field Office (see Table 3-3) would remove 74 m^2 or 0.007 ha (800 ft^2 or 0.02 ac) from OHV use. These long-term impacts would include the total fenced area for the PBO station. The BLM estimates that 39,311,000 acres (85 percent of BLM land) are open to OHV use. The amount of land removed from potential OHV use would be less than a tenth of a percent of the total OHV-used land. Hunting would be unaffected.

Mitigation Measures

No mitigation measures would be required.

3.2.3.9 Wild Horses / Burros

Existing Conditions

The Wild and Free-Roaming Horse and Burro Act of 1971 governs the management and protection of wild horses and burros. The purpose of the law is to ensure preservation of animals and prevent undue competition between wild horses/burros and livestock and big game. The regulations governing the protection of wild horses and burros are codified in 43 CFR 4700.

No Herd Management Areas are near the proposed PBO stations. However, horses are found near Site P087R the area on an annual basis (Nelson 2005).

Effects of the Alternatives

Alternative 1: No-Action. The No-Action Alternative would have no impact on wild horses or burros.

Alternative 2: Install PBO Network. Pasture or allotment boundary fences could cause problems with wild horse distribution and prevent the horses and burros from accessing water sources. Site P087R would not be fenced. Although site P007 would be fenced, no horses would be near the site. There would be no effect on the horses in the area.

Mitigation Measures

No mitigation measures would be required.

3.2.3.10 Grazing Allotments

Existing Conditions

Both proposed sites would be located within existing grazing allotments. Sites P007 and P087R would be located in the Salmon River and South Buckhorn allotments, respectively.

Effects of the Alternatives

Alternative 1: No-Action. The No-Action Alternative would have no impact on grazing.

Alternative 2: Install PBO Network.

Only a small amount of land (0.17 m^2 or 1.9 ft^2) would be converted from multiple uses if the proposed PBO stations are installed. Site P007 will be fenced. The fenced site plus the long-term impact of site P087R would remove 74 m^2 or 0.007 ha (800 ft^2 or 0.02 ac) from grazing. Considering the size of the grazing allotments, the amount of land removed from grazing would not substantially alter amount of the forage available in any allotment.

Mitigation Measures

No mitigation measures would be required.

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3.2.4 Ely

Seven PBO stations are proposed on Ely Field Office land. There would be two short drill-braced monuments and five deep drill-braced monuments installed. All seven stations (P005, P075, P076, P077, P079, P080, and P102) would be fenced.

3.2.4.1 Soils and Geology

Existing Conditions

Site-specific soil types and thicknesses and geologic (bedrock) conditions determine which type of CGPS installations would be used. Sedimentary or metamorphic bedrock is present at the surface for the seven proposed PBO stations, with shallow to no soil on three of the sites. The soil associations present for the proposed PBO stations sites are Zimbob-Pookaloo Association (for P005 and P075); Tecomar-Pookaloo-Zimbob Association; Hyzen-Pookaloo-Tecomar Association; Palinor-Urmafot-Palinor, Steep Association; Kyler-Amtoft, Thin Surface-Rock Outcrop Association; and Wardbay-Hardol-Adobe Association.

Developing the PBO network would not require the excavation or use of local sand, gravel, or rock resources for installation. Seismic and volcanic activity are not a concern because these are the hazards that will be observed by the PBO network. Detailed reviews of the local geology and seismic setting were completed as part of designing the network configuration. No geologic hazards such as land slides, rock falls, or soil subsidence are present at any of the proposed sites.

Effects of the Alternatives

Alternative 1: No-Action. The No-Action Alternative would have no direct impact on soils or geology. Because no PBO stations would be installed, there would be no surface or subsurface disturbance of soils or potential for construction-related erosion.

The No-Action Alternative, which consists of not installing the PBO network on Nevada BLM administered public land, would substantially limit the effectiveness of the PBO network. This would reduce the amount of in-depth knowledge of geology and seismic activity in Nevada.

Alternative 2: Install PBO Network. The PBO network siting criteria (Appendix B) dictate that areas highly prone to soil erosion be avoided.

When the network is installed, limited surface and subsurface disturbance would occur during the one- to two-day construction period for each station as shown in Tables 3-2 and 3-3. Long-term impacts would be restricted to the area drilled for installation of the stainless steel legs and the foundation for the equipment mast.

A total of seven PBO stations would be installed on lands managed by the Ely Field Office. The total temporary surface disturbance would be 2,623 m^2 or 0.26 ha (28,235 ft^2 or 0.65 ac) for the PBO stations as shown in Table 3-3. Final installation would result in about 518 m^2 or 0.05 ha (5,600 ft^2 or 0.13 ac) of long-term disturbance, including all sites that would be fenced.[3]

This minor amount of ground disturbance would not have any substantive impact on soils or geological resources. Areas disturbed during installation would be revegetated according to BLM guidelines.

Mitigation Measures

No mitigation measures would be required.

3.2.4.2 Transportation and Access

Existing Conditions

Transportation and access to any given PBO site would be conducted on existing roads, both improved and unimproved. No new roadways would be constructed for the Proposed Action. Where installations are located some distance from an established roadway, final access to the site would be by foot, horse, ATV, or four-wheel-drive pickup truck.

Effects of the Alternatives

Alternative 1: No-Action. The No-Action Alternative would have no impact on transportation or access.

Alternative 2: Install PBO Network. Installation of short drill-braced monuments would typically involve transporting equipment and personnel using one four-wheel-drive pickup truck with a 4-m (14-ft) trailer. These monument types often would be installed in remote areas where existing roadways are narrow and unimproved. Proposed PBO stations P005 and P077 would be constructed using short drill-braced monuments. Site P005 is

[3] The area used by the fence (74 m^2 or 800 ft^2) would have less soil impact than the total area that would be enclosed by the fence.

located about 123 m (425 ft) from the adjacent road while P077 is located 716 m (2,350 ft) from the existing road. A helicopter would be used to deliver sling loads of equipment to site P077. The helicopter would not land at the proposed site. Instead, the helicopter would use the dirt road below the site as a staging area. This is the same area where the pickup trucks would park. An ATV would shuttle people near the site using an existing two-track road. Because of the remoteness of these locations, little or no traffic would be obstructed.

Installation of deep drill-braced monuments would require two or three four-wheel-drive pickup trucks with 4-m (14-ft) trailers and one 18-wheel semi-truck to deliver the tracked drill rig. Because of the need for the drill rig, these monuments would be installed only in areas where roadways are wide enough and improved (that is, paved or graded and maintained) to a condition to accommodate the semi-truck. Roadways in these types of locations usually offer nearby pull-off sites where vehicles can be parked to avoid conflicts with passing traffic. The drill rig would be driven about 9 m (30 ft) from the dirt road to reach the proposed site P075 and 168 m (550 ft) to reach proposed site P102. The area of temporary impacts for driving the drill rig or pickup truck from the road to the proposed off-road sites would be 1,129 m^2 or 0.11 ha (12,024 ft^2 or 0.28 ac). For the remaining sites, access to the proposed sites can be accomplished from an existing road.

Maintenance activities would occur annually or, more likely, on a two- to five-year cycle. Maintenance inspections would involve one or two crew members visiting a site using one four-wheel-drive pickup truck. The final approach from the nearest road to the installed monuments would be on foot.

Impacts to transportation and access on BLM administered public land would be negligible and would not obstruct BLM administered public land or resources. Installation of the network would have a negligible impact on existing BLM roadways. The area temporarily disturbed by equipment accessing sites P005, P075, and P102 would be revegetated to preconstruction conditions according to BLM guidelines.

Mitigation Measures

No mitigation measures would be required.

3.2.4.3 Air Quality

Existing Conditions

The Federal Clean Air Act (CAA) of 1970 and the Clean Air Act Amendments of 1990 require the U.S. Environmental Protection Agency (EPA) to adopt air quality standards and implement environmental policies that ensure cleaner air quality. Standards were established to protect public health, safety, and welfare from known or anticipated adverse effects of criteria pollutants: sulfur dioxide (SO_2), particulate matter under 10 microns in diameter (PM_{10}), particulate matter under 2.5 microns in diameter ($PM_{2.5}$) carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), and lead (Pb). The state of Nevada has set air quality standards for criteria pollutants that are generally based on the federal standards for air quality. The Nevada State Environmental Commission has also established an air quality standard for hydrogen sulfide (State of Nevada 2002).

Areas where air quality exceeds the National Ambient Air Quality Standards (NAAQS) for criteria pollutants are called nonattainment areas, and states must develop plans for attaining and maintaining the NAAQS in these areas. These plans generally include emissions reduction measures, such as limitations on stationary source emissions, and work practice standards. There are no nonattainment areas in the Ely Field Office jurisdiction.

The Bureau of Air Pollution Control (BAPC) regulates air quality and issues permits for air pollution sources. The BAPC also regulates fugitive dust through surface area disturbance permits. Projects not related to agriculture that disturb more than 5 ac must obtain a surface area disturbance (SAD) permit and prepare a dust control plan (BAPC, no date).

Effects of the Alternatives

Alternative 1: No-Action. The No-Action Alternative would have no impact on existing air quality.

Alternative 2: Install PBO Network. The PBO stations have no operational emissions, so no air quality impacts would occur from site operation.

Construction of short drill-braced monuments requires a generator-powered handheld rotary drill to penetrate bedrock (see Section 2.2.1.1). The handheld rotary drill is powered by a clean-burning Honda EU2000i four-stroke generator. The generator is powered by a 3.5-horsepower, single-cylinder, overhead-cam, air-cooled gasoline engine. The unit uses inverter technology to provide 2,000 watts of power and runs up to 15 hours on a single tank (4.3 liters or 1.1 gallons) of gasoline. This drill would be operated during only

part of the one-day construction period. Emissions would be short-term, intermittent, and negligible.

Construction of deep drill-braced monuments requires the use of a track-mounted drill rig (see Section 2.2.1.2). Exhaust emissions from the drill rig for the two-day installation period would have a negligible impact on air quality at the deep drill-braced sites. Two types of drills are commonly used: Komatsu PC 45 Excavator and Ingersoll Rand ECM 370. For hard-rock drilling, when a smaller track-mounted drill rig is used (Komatsu PC 45 Excavator), an additional high-pressure air compressor is sometimes used in conjunction with the track-mounted drill rig. The Ingersoll Rand P185WIR air compressor that is used is a 65-horsepower unit. The drilling equipment that UNAVCO would use falls under regulated mobile sources of emissions or is listed on the trivial emissions list (hand-held equipment and air compressors and pneumatically operated equipment, including hand tools, are considered trivial sources and are not monitored for air quality pollution by the State of Nevada).

Due to the small area of disturbance (74 m^2 [800 ft^2] per PBO station) where construction activities would occur and the short duration of the construction period (one to two days) for each site, fugitive dust emissions from construction activities would be negligible. Installation of all seven PBO stations would disturb 2,623 m^2 or 0.26 ha (26,635 ft^2 or 0.65 ac) for construction of all of the CGPS monuments. A SAD permit and a dust control plan would not be required because the area of disturbance would be less than 5 ac.

Because no emissions would be produced during operation of the CGPS sites and the disturbance would occur in dispersed sites on Ely Field Office land and in different time periods for one to two days, the installation of PBO stations under Alternative 2 would have a negligible effect on air quality.

Mitigation Measures

No mitigation measures would be required.

3.2.4.4 Noise

Existing Conditions

The unit used to describe the intensity of sound is the decibel (dB). The A-weighted decibel scale, approximates the range of human hearing by filtering out lower-frequency noises, which are less damaging than higher-frequency noises. The A-weighted decibel, denoted by dB(A), is the unit of noise

measurement used in most noise ordinances and standards. For a frame of reference, the threshold of hearing is 0 dB(A), an air conditioner at 6 m (20 ft) is 60 dB(A), and an auto horn at 1 m (3 ft) is 120 dB(A) (CEQ 1970).

The Noise Control Act of 1972 and its subsequent amendments (Quiet Communities Act of 1978 [42 U.S.C Parts 4901 – 4918]), delegates authority to regulate environmental noise to the states and directs government agencies to comply with local community noise statutes and regulations (EPA 1974). In Nevada, Nevada Revised Statutes (NRS) 244.363 gives counties the authority to enact noise ordinances to regulate, control and prohibit excessive noise which is injurious to the health or interferes with the enjoyment of life or property within the county. Typical levels of acceptable noise are tied to land use and range from 60 dB(A) (residential) to 75 dB(A) (industrial) day-night average sound levels (L_{dn}).

Effects of the Alternatives

Alternative 1: No-Action. The No-Action Alternative would have no impact on ambient noise levels.

Alternative 2: Install PBO Network. Once installed, the proposed PBO stations would not emit any discernible operational noise. Construction noise would be limited to the one or two days required for equipment installation.

To install the CGPS units, handheld rotary drills and track-mounted drills would be used. The handheld rotary drill is powered by a Honda EU2000i four-stroke generator. These 3.5-horsepower, single-cylinder engines are totally enclosed and produce 59 dB(A) of sound at 7 m (23 ft) under a full load, which is less than the noise level of everyday speech. The track-mounted drill (Ingersoll Rand ECM 370) produces noise levels that range from 85 dB(A) at 16 m (42 ft) behind the drill to 92 dB(A) at 10 m (33 ft) in front of the drill (Ingersoll Rand 1990). Sometimes an additional high-pressure compressor unit is used with the track-mounted drill for hard-rock drilling. The high-pressure compressor unit produces 76 dB(A) of sound at 7 m (23 ft) (Ingersoll Rand 2005).

The PBO stations on the Ely Field Office lands would not be near sensitive noise receptors (such as residences, schools, or hospitals), as dictated by the PBO Network siting criteria (Appendix B). The noise impacts of construction would be intermittent during the one- to two-day construction period. No construction would occur during nighttime hours. For these reasons, the Proposed Action is not expected to have any substantive noise impact.

Mitigation Measures

No mitigation measures would be required.

3.2.4.5 Biological Resources

Existing Conditions

The Proposed Action would be located in the Nevada-Utah Mountains Semidesert–Coniferous Forest–Alpine Meadow Province Ecoregion (M341). Sagebrush species dominate the ecosystem at lower elevations, but shadscale, fourwing saltbush, rubber rabbitbrush, spiny hopsage, and horesebrush are also present. In the transition zone between the sagebrush zone and the coniferous mountain zone is the woodbelt which consists of juniper and pinyon pine species (Bailey 1995). According to soil survey maps, the corresponding vegetation present on the proposed sites includes black sagebrush, mountain big sagebrush, Indian ricegrass, Sandberg bluegrass, shadscale, winterfat, bluebunch wheatgrass, Utah juniper, and bottlebrush squirreltail. On four of the seven proposed PBO stations, rocky shallow soils or no soils are present, so there is little understory vegetation present, especially on site P102 which also does not have canopy cover. On sites P077 and P075, sagebrush is present with pinyon pine near the proposed site. On the remaining sites (P076, P079, and P080), the topography is flat and consists of primarily sagebrush, though pinyon pines can be observed off-site from sites P076 and P079. On site P080 sagebrush is limited; instead the ground cover is sparse clumps of grasses and winterfat. No wetland or riparian areas are present at any of the proposed PBO stations.

Bird species found in the area range from burrowing owls to sage sparrow and sage thrasher in the sagebrush shrublands. Raptors, including the American kestrel, ferruginous hawk, and golden eagle, can also be found. The pinyon jay and black-throated gray warbler along with flocks of bushtits can be observed. Many reptiles can be found and collared lizards are common (Bailey 1995).

No federal or state threatened or endangered species or sensitive species were reported to occur at any of the proposed PBO station sites on Ely Field Office land.

Effects of the Alternatives

Alternative 1: No-Action. The No-Action Alternative would have no impact on existing vegetation.

Alternative 2: Install PBO Network. Two short drill-braced monuments are proposed for installation using a handheld rotary drill and other equipment that can be hand carried, packed on animals, delivered by helicopter, or driven by vehicle over four-wheel-drive roads. These installations would be low impact and would require about 74 m^2 (800 ft^2) of ground disturbance during construction. Installation time would be about one day. Long-term ground disturbance would be restricted to the 0.17 m^2 (1.9 ft^2) area drilled for the monument legs and equipment mast foundation (refer to Table 3-2).

Five deep drill-braced monuments are proposed for installation. Installing deep drill-braced monuments would disturb vegetation during construction. Monument installation requires a track-mounted drill rig to maneuver in an area about 18 m (60 ft) in diameter around the proposed monument location, for a total installation disturbance of 263 m^2 (2,827 ft^2). Sometimes a 15 × 15 m (50 × 50 ft) staging area is also necessary. The track-mounted drill rig would be delivered using a semi-truck and then driven the final distance to the installation location. See Section 3.2.4.2, Transportation Access, for more information. Installation time would be about two days. Similar to the short drill-braced monument, long-term ground disturbance would be restricted to the 0.17 m^2 (1.9 ft^2) area drilled for the monument legs and equipment mast foundation.

Impacts from construction activities would be short term. Vegetation would be cut and crushed, but the area of disturbance would be minor and plant roots and crowns would remain intact. Crushing or cutting vegetation will be avoided as much as possible. Vegetation is expected to re-establish in the short term depending on the location and amount of rainfall received. The long-term impact area for a PBO station would be small (0.17 m^2 or 1.9 ft^2); therefore, the existing vegetation would remain relatively intact and should recover. Any required revegetation would be completed according to BLM guidelines. Non-woody vegetation would be able to grow freely throughout the installation.

Installation of all seven PBO stations on Ely Field Office lands would disturb a total of 2,623 m^2 or 0.26 ha (28,235 ft^2 or 0.65 ac). The long-term impacts would encompass 518 m^2 or 0.05 ha (5,600 ft^2 or 0.13 ac) including the impacts for seven fenced sites as noted in Table 3-3. Non-woody vegetation would continue to grow in the fenced area. The Proposed Action would result in very minor long-term impacts to vegetation.

Mitigation Measures

No mitigation measures would be required.

3.2.4.6 Cultural Resources

Existing Conditions

Section 106 of the National Historic Preservation Act of 1966, as amended and 36 CFR 800, the implementing code, requires that districts, sites, buildings, structures or objects that are included on or are eligible for the for inclusion on the National Register of Historic Places be taken into account before a federal action is undertaken. Class III cultural resource surveys were completed by Kautz Environmental Consultants, Inc. (KEC) to determine if cultural resources were present at any of the proposed PBO stations. One-acre surveys were completed around the seven proposed PBO stations and along the access roads to the PBO stations. The surveys were completed in October 2005. According to the PBO station siting criteria, cultural resource sites were avoided when possible by shifting the access road or the PBO station site.

At six of the proposed PBO station sites (P005, P076, P077, P079, P080, and P102), either no prehistoric or historic cultural resource sites were found or sites were found but were avoided. At sites P077 and P080, an isolated historic artifact and two isolated prehistoric artifacts were found.

At site P005, two cultural resource sites were located along the existing two-track road. Both sites consisted of small tin can scatters. The sites were avoided by shifting the access road slightly off the existing two-track road for a short distance.

For site P076, four sites, all historic trash scatters, were located but all four sites were avoided. Three sites were avoided by shifting the access road and one site was avoided by shifting the PBO station site.

Two sites were avoided at Site P079 by shifting the existing two-track access road. The first site is an old mining complex and the second site is a historic trash scatter.

At site P075, one archeological site was observed and recorded. The site, a historic road segment of the Lincoln Highway and an associated trash scatter, is the access road to the proposed PBO station. This segment of historic road was determined to be a non-contributing element of the Lincoln Highway, which is eligible for the NRHP.

Inventory Reports were completed for each of the sites using the BLM Nevada Negative Report format. These reports were filed with the Ely Field Office. A report was also filed with the Ely Field Office for site P075 because it would not be possible to avoid the site.

Effects of the Alternatives

Alternative 1: No-Action. The No-Action Alternative would have no impact on cultural resources.

Alternative 2: Install PBO Network. The PBO network siting criteria (Appendix B) dictate that the following areas and resources be avoided:

- Cultural resources listed or determined to be eligible for listing on the National Register of Historic Places.
- Resources and locations determined to have importance to the free expression or practice of the Native American religion, in accordance with the American Indian Religious Freedom Act.
- Areas that contain cultural resources of value at the state or local level but which are not considered eligible for National Register listing for example, cultural properties listed on state or local registers or identified by state historians, state archaeologists, or other appropriate state and local agency personnel).

For six of the proposed PBO stations, all historic or prehistoric sites were avoided by shifting the PBO station or access road along the existing two-track roads. For site P075, the historic road segment was determined not eligible for the NRHP either by itself or as a contributing element of the Lincoln Highway, which is eligible for the NRHP. The road would be driven on by the construction crews over a two-day installation period, once in each direction each day. The equipment would not affect the road. The site requires no additional management consideration before installation of the proposed PBO station. No cultural resources as defined in the PBO network siting criteria would be affected by the proposed PBO stations.

Mitigation Measures

No mitigation measures would be required.

3.2.4.7 Visual Resources

Visual resources refer to all visible objects and features on a landscape (i.e., man-made and natural landforms whether moving or stationary). Because these resources contribute to and define the scenic or visual quality of the landscape, BLM is required to manage visual resources in such a manner to protect the quality of scenic values. BLM has established methods for visual resource planning and assessing visual resource impacts (BLM 1986).

The PBO stations are within existing Class III visual resource management objectives. The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the causal observer. Changes should repeat the basic elements found in the dominant natural features of the characteristic landscape.

Effects of the Alternatives

Alternative 1: No-Action. The No-Action Alternative would have no impact on visual quality.

Alternative 2: Install PBO Network. The PBO network siting criteria (Appendix B) dictate that areas designated as scenic highways, natural landmarks, or areas with visual concerns be avoided.

Minor visual impacts would result from the presence of vehicles and the disturbance of soils during installation of the PBO stations. These temporary impacts would be minor since construction would be one to two days and construction would involve very few vehicles and a small area of soil disturbance.

Generally, the CGPS equipment would be seen by a few motorists, hikers, climbers, and back-country tourists at close range to the installation, which would have a minor impact on the visual quality of the area. For sites P079 and P102, mining is located near the site (Wagner Mining Area and Dome Mining). Site P102 would sit on the ridgeline of Little Bald Mountain, but the small scale of the CGPS monument means it would not be visible from long distances. Site P079 would sit on a flat, open area. The short sagebrush at the proposed site would not camouflage the equipment. Site P079 would be near Cave Lake State Park and Humboldt National Forest but should not be visible from either location. From Site P079, a large transmission line is visible, which is larger in scale than the proposed PBO station. Proposed PBO stations P005 and P075 would be near valley floors but would be generally shielded from views by bedrock/boulders as well as the larger pine trees that would hide the CGPS equipment. Site P005 would be located about 7 mi from the Pony Express Trail but would not visible from the trail. Sites P076 and P080 would be located in low, flat areas but would be shielded by the surrounding hills. Site P080 would also be shielded by surrounding vegetation. PBO stations will be painted brown to reduce the visibility of the sites.

All PBO stations will be fenced to protect the CGPS equipment. The sites will be fenced with T-posts and three strands of 3/8-in or ½-in steel cable. The cable will be strung at 16 in, 32 in, and 48 in. The fence will be painted brown to reduce reflectivity. The fences would not block views or introduce any visually dominant features into the landscape.

For these reasons, impacts from the Proposed Action on the visual quality of the landscape are expected to be minor and consistent with the designated VRM classes.

Mitigation Measures

No mitigation measures would be required.

3.2.4.8 Recreation/Visitor Services

Existing Conditions

Within the Ely Field Office jurisdiction there several wildlife protection areas that offer wildlife viewing, birdwatching and in some instances fishing, including Ely Elk Viewing Area. There are several campgrounds: Cleve Creek, Tabor Creek, and Illipah Reservoir Recreation Area. Garnet Hill offers rockhounding opportunities (Recreation.gov 2004). Sacramento Pass recreation area offers hiking and scenic views.

While many visitor opportunities exist in the Ely Field Office, dispersed recreation opportunities such as for OHVs are also present. This type of recreation is restricted to existing roads and trails on the Ely Field Office lands.

Effects of the Alternatives

Alternative 1: No-Action. Implementation of the No-Action Alternative would have no impact on recreation or visitor services.

Alternative 2: Install PBO Network. The PBO Network siting criteria (Appendix B) dictate that areas in national and state parks and designated recreational areas must be avoided. No PBO stations would be located within the recreation areas noted in existing conditions. However, site P080 is located near Sacramento Pass recreation area. Several of the PBO stations are located along Highway 50, which has been designated as the “Loneliest Highway Special Recreation Management Area (SRMA)”.

Additionally, the PBO stations would be located in areas that could be potentially used for OHVs. Installation of seven PBO stations on lands in the

Ely Field Office would remove 518 m^2 or 0.05 ha (5,600 ft^2 or 0.13 ac) (see Table 3-3) from OHV use. These long-term impacts include the total fenced area for all seven sites. The BLM estimates that 39,311,000 acres (85 percent of BLM land) are open to off-highway vehicle (OHV) use. The amount of land removed from potential OHV use is less an a tenth of a percent of the total OHV used land.

Mitigation Measures

No mitigation measures would be required.

3.2.4.9 Wild Horses / Burros

Existing Conditions

The Wild and Free-Roaming Horse and Burro Act of 1971 governs the management and protection of wild horses and burros. The purpose of the law is to ensure preservation of animals and prevent undue competition between wild horses/burros and livestock and big game. The regulations governing the protection of wild horses and burros are codified in 43 CFR 4700.

Sites P005, P102, and P076 would be in the Buck and Bald HMA. Sites P075, P077, P079, and P080 are not located in a HMA

Effects of the Alternatives

Alternative 1: No-Action. The No-Action Alternative would have no impact on wild horse or burros.

Alternative 2: Install PBO Network. Pasture or allotment boundary fences could result in problems of wild horse distribution or use patterns. The fences could restrict the horses and burros from water sources. Sites P005, P102 and P076 would be fenced, however the small size of the fenced area would not restrict the movement of the wild horses or restrict access to water. Additionally, the fences would consist of T posts and three strands of 3/8-in or ½-in steel cable. The cable will be strung at 16 in, 32 in, and 48 in. This type of fence would prevent the horses from getting stuck or injured in the fence.

Mitigation Measures

No mitigation measures would be required.

3.2.4.10 Grazing Allotments

Existing Conditions

All of the proposed PBO stations would be located within existing grazing allotments. Sites P005, P102, P080, and P075 would be located in the Warm Springs Allotment. Site P076 would be located in the Dry Mountain Allotment. Site P077 would be located in the Tom Plain Allotment, and Site P079 would be located in the Duckwater Allotment.

Effects of the Alternatives

Alternative 1: No-Action. The No-Action Alternative would have no impact on grazing.

Alternative 2: Install PBO Network. Only a small amount of land would be converted from multiple use if the proposed PBO stations are installed (0.17 m^2 [1.9 ft^2]). However, all of sites in the Ely Field Office would be fenced as requested by BLM. Fenced sites would remove 74 m^2 or 0.007 ha (800 ft^2 or 0.02 ac) per site for a total of 518 m^2 or 0.05 ha (5,600 ft^2 or 0.13 ac) from grazing. Considering the size of the grazing allotments, the amount of land that would be removed from grazing would not substantially alter the forage available in any allotment.

Mitigation Measures

No mitigation measures would be required.

3.2.5 Winnemucca

Seven PBO stations are proposed on Winnemucca Field Office land. All of the proposed PBO stations would be deep drill-braced monuments. All seven stations will be fenced.

3.2.5.1 Soils and Geology

Existing Conditions

Site-specific soil types and thicknesses and geologic (bedrock) conditions determine which type of CGPS installations would be used. Sedimentary bedrock is present at the surface for the eight proposed PBO stations, with a shallow to no soil condition on three of the sites. The soil associations present for the proposed PBO stations sites include: Soughe-Hoot Association, Genegraf-Chilper-Bluewing, Burrita-Hoot Rock Outcrop, Stumble-Kuhe-Bluewing Association, Roic-Singate-Celeton Association, Bango-Appian Association, and Biga-Granshaw-Labkey Association.

Developing the PBO network would not require the excavation or use of local sand, gravel, or rock resources for installation. Seismic and volcanic activity are not a concern because these are the hazards that will be observed by the PBO network. Detailed reviews of the local geology and seismic setting were completed as part of designing the network configuration. No geologic hazards such as land slides, rock falls, or soil subsidence are present at any of the proposed sites.

Effects of the Alternatives

Alternative 1: No-Action. The No-Action Alternative would have no direct impact on soils or geology. Because no PBO stations would be installed, there would be no surface or subsurface disturbance of soils or potential for construction-related erosion.

The No-Action Alternative, which consists of not installing the PBO network on BLM administered public lands would substantially limit the effectiveness of the PBO network, and reduce the gathering of in-depth knowledge of geology and seismic activity in Nevada.

Alternative 2: Install PBO Network. The PBO Network siting criteria (Appendix B) dictate that areas highly prone to soil erosion be avoided.

When the network is installed, limited surface and subsurface disturbance would occur during the one- to two-day installation period of each station as shown in Tables 3-2 and 3-3. Long-term impacts would be restricted to the area drilled for installation of the stainless steel legs and the foundation for the equipment mast.

A total of seven PBO stations would be installed on lands managed by Nevada BLM Winnemucca Field Office. Temporary surface disturbance would be 3,465 m^2 or 0.35 ha (37,289 ft^2 or 0.86 ac) for the PBO stations as shown in Table 3-3. Final installation would result in about 518 m^2 or 0.05 ha (5,600 ft^2 or 0.13 ac) of long-term disturbance for, including all sites that would be fenced.[4]

The minor amount of ground disturbance would not have any substantive impact on soils or geological resources.

Mitigation Measures

Construction areas would be revegetated according to BLM guidelines to preconstruction conditions.

3.2.5.2 Transportation and Access

Existing Conditions

Transportation and access to any PBO site would be conducted on existing roads, both improved and unimproved. No new roadways would be constructed for the Proposed Action. Where installations are located at a distance from an established roadway, final access would be completed on foot, horse back, ATV, or by four-wheel drive pickup truck.

Effects of the Alternatives

Alternative 1: No-Action. The No-Action Alternative would have no impact on transportation or access.

Alternative 2: Install PBO Network. Installation of d***eep*** drill-braced monuments would require two or three four-wheel-drive pickup trucks with 4 m (14 ft) trailers and one 18-wheel semi-truck to deliver the tracked drill rig. Because of the need for the drill rig, these monuments would be installed only in areas where roadways are wide enough and improved (that is, paved or graded and maintained) to a condition to accommodate the semi-truck. The

[4] The fenced area of 74 m^2 or 800 ft^2 would have less soil impact than the total area that is fenced.

drill rig would be driven about 91 m (300 ft) from the dirt road to reach the proposed site P083 and 87 m (290 ft) to reach site P096. The area of temporary impact for driving the rig from the road would be 662 m^2 or 0.07 ha (7,044 ft^2 or 0.16 ac). For the remaining sites, access to the proposed sites can be accomplished off of an existing road.

Maintenance activities would occur annually or, more likely, on a two- to five-year cycle. Maintenance inspections would involve one or two crew members visiting a site using one four-wheel-drive pickup truck. Final approach from the nearest road to the installed monuments would be completed on foot.

Impacts to transportation and access on BLM administered public land would be negligible and would not result obstruct to BLM administered public land or resources. Installation of the network would have a negligible impact on existing BLM roadways.

Mitigation Measures

The area temporarily disturbed by equipment accessing sites P083 and P096 would be revegetated to preconstruction conditions according to BLM guidelines.

3.2.5.3 Air Quality

Existing Conditions

The Federal Clean Air Act (CAA) of 1970 and the Clean Air Act Amendments of 1990 require the U.S. Environmental Protection Agency (EPA) to adopt air quality standards and implement environmental policies that ensure cleaner air quality. Standards were established to protect public health, safety, and welfare from known or anticipated adverse effects of several criteria pollutants: sulfur dioxide (SO_2), particulate matter under 10 microns in diameter (PM_{10}), particulate mater under 2.5 microns in diameter ($PM_{2.5}$), carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), and lead (Pb). The state of Nevada has set air quality standards for criteria pollutants that are generally based on the federal standards for air quality. The Nevada State Environmental Commission has also established an air quality standard for hydrogen sulfide (State of Nevada 2002).

Areas where air quality exceeds the National Ambient Air Quality Standards (NAAQS) for criteria pollutants are called nonattainment areas, and states must develop plans for attaining and maintaining the NAAQS in these areas. These plans generally include emissions reduction measures, such as

limitations on stationary source emissions, and work practice standards. There are no nonattainment areas on Winnemucca Field Office lands.

In Nevada, the Bureau of Air Pollution Control (BAPC) requires a permit for source emissions, but a permit is not required if your activities, pieces of equipment or storage containers will not cause emissions other than steam or water particles. The BAPC maintains list of insignificant and trivial sources of air pollution, which include hand-held equipment, air compressors, and pneumatically operated equipment. Mobile sources of emission are regulated under NRS 445B.700 –445B.834, which include vehicle inspections. The BAPC also regulates fugitive dust through surface area disturbance permits. Projects not related to agriculture that disturb 5 acres of surface area must obtain a surface area disturbance (SAD) permit and prepare a dust control plan (BAPC, no date)

In Washoe County, the Washoe County District Health Department Air Quality Management Division in coordination with the Air Pollution Control Hearing Board is required by federal law to permit and inspect stationary sources of air pollution for compliance with both the federal requirements and local air quality regulations. Major emitting facilities would include emissions of 100 tons/year. A dust control plan must be submitted to the County District Health Department if more than 1 acre of topsoil is altered, including removing vegetation (Washoe County 2005a & Washoe County 2005b). Pershing and Humboldt Counties do not have additional requirements beyond the state requirements discussed above.

Effects of the Alternatives

Alternative 1: No-Action. The No-Action Alternative would have no impact on existing air quality.

Alternative 2: Install PBO Network. The proposed PBO stations would have no operational emissions, so no air quality impacts would occur from site operation.

Construction of deep drill-braced monuments requires the use of a track-mounted drill rig (see Section 2.2.1.2). Exhaust emissions from the drill rig for the two-day installation period would have a negligible impact on air quality at the deep drill-braced sites. Two types of drills are commonly used: Komatsu PC 45 Excavator and Ingersoll Rand ECM 370. For hard-rock drilling, when a smaller track-mounted drill rig is used (Komatsu PC 45 Excavator), an additional high-pressure air compressor is sometimes used in conjunction with the track-mounted drill rig. The Ingersoll Rand P185WIR air compressor that is used is a 65 horsepower unit. The drilling equipment

that UNAVCO would use falls under regulated mobile sources of emissions or is listed on the trivial emissions list (hand-held equipment and air compressors and pneumatically operated equipment, including hand tools, are considered trivial sources and are not monitored for air quality pollution by the State of Nevada). In Washoe County, these mobile sources are not specifically regulated by the Washoe County District Health Department Air Quality Management Division.

Due to the small area of disturbance (263 m^2 [2,827 ft^2] per PBO station) where construction activities would occur and the short duration of the construction period (one to two days) for each site, fugitive dust emissions from construction activities would be negligible. Installation of all seven PBO stations 3,465 m^2 or 0.35 ha (37,289 ft^2 or 0.86 ac) for construction of all of the CGPS monuments. A SAD permit and a dust control plan would not be required because the area of disturbance would be less than 5 ac. For sites P096 which is in Washoe County, a dust control plan would not be needed because the area of disturbance would be less than 1 acre.

Because no emissions would be produced during operation of the CGPS sites and the disturbance would occur in dispersed sites on Winnemucca Field Office land and in different time periods for one to two days, the construction of PBO stations under Alternative 2 would have a negligible effect on air quality.

Mitigation Measures

No mitigation measures would be required.

3.2.5.4 Noise

Existing Conditions

The unit used to describe the intensity of sound is the decibel (dB). The A-weighted decibel scale approximates the range of human hearing by filtering out lower frequency noises, which are less damaging than higher-frequency noises. The A-weighted decibel, denoted as dB(A),, is the unit of noise measurement used in most noise ordinances and standards. For a frame of reference, the threshold of hearing is 0 dB(A), an air conditioner at 6 m (20 ft) is 60 dB(A), and an auto horn at 1 m (3 ft) is 120 dB(A) (CEQ 1970).

The Noise Control Act of 1972, and its subsequent amendments (Quiet Communities Act of 1978 [42 U.S.C Parts 4901 – 4918], delegates authority to regulate environmental noise to the states and directs government agencies to comply with local community noise statutes and regulations (EPA 1974).

In Nevada, Nevada Revised Statutes (NRS) 244.363 gives counties the authority to enact noise ordinances to regulate, control and prohibit excessive noise which is injurious to the health or interferes with the enjoyment of life or property within the county. Typical levels of acceptable noise are tied to land use and range from 60 dB(A) (residential) to 75 dB(A) (industrial) day-night average sound levels (L_{dn}).

Effects of the Alternatives

Alternative 1: No-Action. The No-Action Alternative would have no impact on ambient noise levels.

Alternative 2: Install PBO Network. Once installed, the PBO stations would not emit any discernible operational noise. Construction noise would be limited to the one or two days required for equipment installation.

To install the CGPS units, handheld rotary drills and track mounted drills would be used. The handheld rotary drill would be powered by a Honda EU2000i, four-stroke generator. These 3.5-horsepower, single-cylinder engines are totally enclosed and produce 59 dB of sound at 7 m (23 ft) under a full load, which is less than the noise level for common speech. The track-mounted drill (Ingersoll Rand ECM 370) produces noise levels that range from 85 dB(A) at 16 m (42 ft) behind the drill to 92 dB(A) at 10 m (33 ft) in front of the drill (Ingersoll Rand 1990). Sometimes an additional high-pressure compressor unit would be used with the track-mounted drill for hard rock drilling. The high-pressure compressor unit produces 76 dB(A) of sound at 7 m (23 ft) (Ingersoll Rand 2005).

The seven PBO stations on the Winnemucca Field Office lands would not be near sensitive noise receptors (such as residences, schools, or hospitals), as dictated by the PBO Network siting criteria (Appendix B). The noise impacts of construction would be intermittent during the one- to two-day construction period. No construction would occur during nighttime hours. For these reasons, the Proposed Action is not expected to have any substantive noise impact.

Mitigation Measures

No mitigation measures would be required.

3.2.5.5 Biological Resources

Existing Conditions

The Proposed Action would be located in a variety of habitats located throughout the ecoregions of Nevada (Bailey 1995). Ecoregions potentially affected by the Proposed Action include the Intermountain Semidesert and Desert Province (341) and the Intermountain Semidesert Province (342). The Intermountain Semidesert Province is dominated by sagebrush or shadscale mixed with short grasses. In the alkaline areas, greasewood may be present. Large mammals present include coyote, pronghorn antelope, mule deer, mountain lion, and bobcat. Smaller mammals include ground squirrel, deer mouse, black-tail jackrabbit, and porcupine. The region supports breeding and resting grounds for migrating birds. Sage grouse are abundant in the uplands. Raptors are also found in the area such as ferruginous hawk, rough-legged hawk, and burrowing owl. The proposed PBO station P096 would be in this ecoregion.

The remaining sites are found in the Intermountain Semidesert and Desert Province are characterized by interior basins resulting from the steep mountains that rise from the plains. The vegetation is dominated by sagebrush at the lower elevations but also includes antelope bitterbrush, shadscale, fourwing saltbush, rubber rabbitbrush, spiny hopsage, and horsebrush. The woodland zone is dominated by juniper and pinyon pine with the upper elevations being dominated with sparse conifer forests. Sites P013 and P038 would be dominated by Wyoming big sagebrush; sites P078, P097 and P098 would be dominated by shadscale and Bailey's greasewood; site P096 is dominated by shadscale; and site P0138 is dominated by spiny hopsage.

There are few large mammals but the pronghorn antelope, ground squirrels, jackrabbits, kangaroo mice, coyotes, and kit foxes are inhabitants of this ecoregion. Burrowing owls, sage thrasher, sage grouse, American kestrel and golden eagles can also be found (Bailey 1995).

No federal or state threatened or endangered species or sensitive species were reported to occur at any of the proposed PBO station sites on Winnemucca Field Office land.

Effects of the Alternatives

Alternative 1: No-Action. Implementation of the No-Action Alternative would have no impact on existing vegetation.

Alternative 2: Install PBO Network. Previously disturbed were chosen as much as possible for the proposed PBO stations. However, installing deep drill-braced monuments would disturb some vegetation during the two-day construction period. Monument installation requires a track-mounted drill rig to maneuver in an area about 18 m (60 ft) in diameter around the proposed monument location. The track-mounted drill rig would be delivered using a semi-truck and driven the final distance to the installation location. See Section 3.2.5.2, Transportation Access for more information. Installation time would be about two days. Long-term ground disturbance would be restricted to the 0.17 m^2 (1.9 ft^2) area drilled for the monument legs and equipment mast foundation.

Impacts from construction activities would be short term. Vegetation would be cut and crushed, but the area of disturbance would be minor and plant roots and crowns would remain intact. Crushing or cutting vegetation will be avoided as much as possible. Vegetation is expected to re-establish in the short term depending the on location and moisture available during the growing season. By minimizing vegetation disruption, sage grouse habitat in the area would not be impacted. The long-term impact area is small (0.17 m^2 or 1.9 ft^2); therefore, the existing vegetation would remain relatively intact and should recover. Non-woody vegetation would be able to grow freely throughout the installation.

By minimizing vegetation disruption, sage grouse habitat in the area would not be impacted. Additionally, as raptors are a concern near sage grouse areas, the PBO stations, including the fence will be equipped with anti-perching mechanisms. Installation of all seven PBO stations on Winnemucca BLM administered public land would disturb a total of 3,465 m^2 or 0.35 ha (37,289 ft^2 or 0.86 ac). The long term impacts would encompass 518 m^2 or 0.05 ha (5,600 ft^2 or 0.13 ac). Because construction impacts would be short in duration and would not remove the vegetation, and because the vegetation could continue to grow over the long term as all sites, including those with fences, the Proposed Action would result in very minor long-term impacts to vegetation.

Mitigation Measures

Any required revegetation would be completed according to BLM guidelines. The fence will be constructed of 4-foot welded wire panels raised 8 inches from the ground. Four inches above the fence panel, a 24-gauge wire will be placed along the fence to prevent raptors from perching on the fence and spiked post caps will be placed on the fence posts to prevent raptors from

perching. Anti-perching mechanisms will also be placed on the equipment mast and post.

3.2.5.6 Cultural Resources

Existing Conditions

Section 106 of the National Historic Preservation Act of 1966 as amended, and 36 CFR 800, the implementing code, requires that districts, sites, buildings, structures, or objects that are included on or are eligible for the for inclusion on the National Register of Historic Places be taken into account before a federal action is undertaken. Class III cultural resource surveys were completed by Kautz Environmental Consultants, Inc. (KEC) to determine if cultural resources were present at any of the proposed PBO stations. One-acre surveys were completed around the seven proposed PBO stations and along the access roads to the PBO stations. The surveys were completed in October 2005. According to the PBO station siting criteria, cultural resource sites were avoided when possible by shifting the access road or PBO station site.

No prehistoric or historic cultural resources sites were found at five of the proposed PBO stations, including sites P078, P083, P096, P098, and P138. Two historic and three prehistoric isolated artifacts were observed at site P138. On Site P013, one small obsidian litchic scatter was observed and recorded near the proposed PBO station. The PBO station was shifted to the west to avoid the site. A Cultural Resources Inventory Negative Report was filed with the Winnemucca Field Office for each of the PBO stations.

A report was filed with the Winnemucca Field Office as a result of the cultural resource inventory. Three historic cultural resource sites and three isolated historic artifacts were observed and recorded on proposed site P097.

The first recorded site is a historic tin can and bottle glass dump along the proposed access route. The site would not be impacted because it is not within the driving areas.

The second recorded site is a historic, unnamed road segment as noted on the 1890 GLO plat map. The third recorded site is also a historic, unnamed road segment as noted on the 1890 GLO plat map. Both have sustained continuous use and have been maintained.

The access route to the proposed PBO station uses both of the historic roads. None of the three recorded sites were determined to be eligible for the NRHP. As none of the sites were determined to be eligible for the NRHP,

and the first recorded site is not within the driving area, access to all PBO station sites will be on existing roads as specified in Section 3.7.

Effects of the Alternatives

Alternative 1: No-Action. The No-Action Alternative would have no impact on cultural resources.

Alternative 2: Install PBO Network. The PBO Network siting criteria (Appendix B) dictate that the following areas and resources be avoided:

- Cultural resources listed or determined to be eligible for listing on the National Register of Historic Places.
- Resources and locations determined to have importance to the free expression or practice of the Native American religion, in accordance with the American Indian Religious Freedom Act.
- Areas that contain cultural resources of value at the state or local level but which are not considered eligible for National Register listing (e.g., cultural properties listed on state of local registers or identified by state historians, state archaeologists, or other appropriate state and local agency personnel).

For five of the proposed PBO stations, no prehistoric or historic cultural resource sites were observed. The isolated artifacts at site P138 are not eligible for the NRHP and require no additional management consideration prior to implementation of the proposed PBO stations. For Site P013, the cultural resource site was avoided by shifting the PBO station.

Site P097, the historic dump site, is not eligible for the NRHP and requires no additional management consideration prior to implementation of the proposed PBO station. The two other sites, historic road segments, were determined not eligible for NRHP. The roads would be driven on by the construction crews, over a two day installation period, once in each direction each day. The equipment would not impact the road. The sites require no additional management consideration prior to implementation of the proposed PBO station. No cultural resources as defined above would be impacted by the proposed PBO stations.

Mitigation Measures

No mitigation measures would be required.

3.2.5.7 Visual Resources

Existing Conditions

Visual resources refer to all visible objects and features on a landscape (that is, human-made and natural landforms whether moving or stationary). Because these resources contribute to and define the scenic or visual quality of the landscape, BLM is required to manage visual resources to protect the quality of scenic values. BLM has established methods for visual resource planning and assessing visual resource impacts (BLM 1986).

Effects of the Alternatives

Alternative 1: No-Action. The No-Action Alternative would have no impact on visual quality.

Alternative 2: Install PBO Network. The PBO Network siting criteria (Appendix B) dictate that areas designated as scenic highways, natural landmarks, or areas with visual concerns be avoided.

Minor visual impacts would result from the presence of vehicles and the disturbance of soils during installation of the PBO stations. These temporary impacts would be minor since construction is of such short duration (one to two days), and construction involves very few vehicles and a small area of soil disturbance.

Generally, the CGPS equipment would be seen by a few motorists, hikers, climbers, and back-country tourists at close range to the installation, which would have a minor impact on the visual quality of the area. Sites P013 and P083 would be located on hill but the topography and vegetation would shield the PBO stations in the middle and background distances. Site P098 would be located on a flat landscape; little vegetation is present that would shield the CPGS equipment. However, site is remote which would reduce the visual presence of the PBO station. The remaining PBO stations would be located on relatively open flat sites. However, the topography surrounding the sites would block middle and background views of the sites in one or more directions. Grazing is a dominant land use in the area. P096 would be located in a power and pipeline corridor which is consistent with the man made infrastructure of the PBO stations.

Seven PBO stations will be fenced with large-gauge steel mesh material to protect the CGPS equipment. The fence will be raised 8" from the ground and have a single top wire (24 gauge wire) placed 4" from the fence panel. Therefore, fences would not block views or introduce any visually dominant features into the landscape.

The proposed PBO stations will be painted dark brown to reduce reflectivity of the CGPS equipment.

For these reasons, impacts from the Proposed Action to the visual quality of the landscape are expected to be minor and consistent with the designated VRM classes.

Mitigation Measures

No mitigation measures would be required.

3.2.5.8 Recreation/Visitor Services

Existing Conditions

Four recreation areas are located within the jurisdiction of Winnemucca Field Office: Black Rock Desert Recreation Area, Lahontan Cutthroat Natural Area, Pine Forest Recreation Management Area, and Water Canyon. Lahontan Cutthroat Natural Area provides opportunities for birdwatching and wildlife viewing and serves as a protected habitat for the threatened Lahontan cutthroat. Black Rock Desert Recreation Area is one of the largest and flattest alkaline playas in the United States. Within the Pine Forest Recreation Management Area there are three popular recreation sites—Blue Lakes, Onion Reservoir, and Knott Creek Reservoir—that offer fishing, hunting, wildlife viewing and primitive camping. Water Canyon is a secluded canyon for outdoor activities (Recreation.gov 2004).

While many visitor opportunities exist in the Winnemucca Field Office, dispersed recreation opportunities such as for OHVs are also present. This type of recreation is generally unrestricted on the Winnemucca Field Office lands.

Effects of the Alternatives

Alternative 1: No-Action. The No-Action Alternative would have no impact on recreation or visitor services.

Alternative 2: Install PBO Network. The PBO Network siting criteria (Appendix B) dictate that areas in national and state parks and designated recreational areas must be avoided. No proposed PBO stations would be located in the recreation areas noted above in the Existing Conditions section. The proposed PBO stations would be located in areas that could potentially be used for OHVs. Installation of seven PBO stations on lands managed by the Winnemucca Field Office would remove 518 m^2 or 0.05 ha (5,600 ft^2 or 0.13 ac) (see Table 3-3) from OHV use. These long-term impacts include the

total fenced area for all eight sites. The BLM estimates that 39,311,000 acres (85 percent of BLM land) are open to OHV use. The amount of land removed from potential OHV use is less than a tenth of a percent of the total OHV-used land.

Mitigation Measures

No mitigation measures would be required.

3.2.5.9 Wild Horses / Burros

Existing Conditions

The Wild and Free-Roaming Horse and Burro Act of 1971 governs the management and protection of wild horses and burros. The regulations governing the protection of wild horses and burros are codified in 43 CFR 4700.

The Winnemucca Field Office jurisdiction has herd management areas (HMAs) and Herd Areas (HAs). HMAs are managed for horses and/or burros, and the animals are present. HAs are not managed for horses or burros, but the animals may be present. Site P098 would be near the Humboldt/West Humboldt HA but there are not horses or burros in the area. Site P097 would not be part of an HMA or HA but there are burros in the area. Site P096 would be in the Truckee Range HA but the horses were gathered from the area and no horses remain. Site P083 would be in the Tobin Range HMA, but there are only a few horses present in the area. Site P078 would be in the East Range HA, but most of the horses are further north of the site. Site P013 would be east of the Little Owyhee HMA, but as the HMA is fenced no horses should be near the proposed PBO station. Site P138 would be near the Shawave Mountains HMA. There are horses and burros in the area near site P138 (Paine 2005).

Effects of the Alternatives

Alternative 1: No-Action. The No-Action Alternative would have no impact on wild horses or burros.

Alternative 2: Install PBO Network.

There would be no affects expected due to the following mitigation measures.

Mitigation Measures

Fences will be constructed at each proposed PBO station as a safety feature to separate the potential contact between wild horses and burros and the CGPS equipment.

3.2.5.10 Grazing Allotments

Existing Conditions

All of the PBO sites would be located within existing grazing allotments. Sites P098 and P097 would be located in the Humboldt Sink Allotment. Site P013 would be located in the Spring Creek Allotment while site P078 would be located in the Klondike Allotment. Site P083 would be located in the South Buffalo (BM) Allotment and site P138 would be located in the Blue Wing–Seven Troughs Allotment. Site P096 would be located in the Desert Queen Allotment.

Effects of the Alternatives

Alternative 1: No-Action. The No-Action Alternative would have no impact on grazing.

Alternative 2: Install PBO Network. Only a small amount of land would be converted from multiple use if the PBO monuments are installed (0.17 m^2 or 1.9 ft^2]. However, all of sites on lands administered by the Winnemucca Field Office will be fenced at the request by BLM. Fenced sites would remove 74 m^2 or 0.007 ha (800 ft^2 or 0.02 ac) per site for a total of 518 m^2 or 0.05 ha (5,600 ft^2 or 0.13 ac) from grazing. Considering the size of the grazing allotments, the amount of land removed from grazing would not substantially alter the amount of forage available in any allotment.

Mitigation Measures

Fences will be constructed at each proposed PBO station as a safety feature to separate the potential contact between range animals and the CGPS equipment.

3.3 Cumulative Impacts

This section addresses the potential cumulative impacts of the No-Action Alternative and the Proposed Action analyzed in this EA. Cumulative impacts can result from individually minor but collectively significant impacts of all projects/actions in the study area that occur over a period of

time. Cumulative impacts include the direct and indirect effects of proposed projects/actions that result from incremental impacts of the Proposed Action (or Alternatives) added to the impacts of other past, present, and reasonably foreseeable projects/actions, regardless of what agency or person undertakes such projects or actions (40 CFR 1508.7). The area considered for cumulative impacts is the state of Nevada for the period of the current resource management plans in the various BLM Districts.

A cumulative impact can result from either (1) the combination of two or more individually significant impacts, or (2) the combination of two or more impacts that are individually less than significant but constitute a significant change in the environment when considered together.

The assessment of cumulative impacts is based on information in the various BLM Resource Management Plans (RMPs) for the affected BLM Field Offices. It is valid to assume that all BLM-administered lands in Nevada will continue to be managed under the multiple-use framework established by FLPMA and in accordance with the individual RMPs for each BLM Field Office. It is expected that a wide variety of projects/actions will be proposed and implemented in the foreseeable future, and that some of these projects/actions could have significant individual and/or cumulative impacts on various resources. In addition, each BLM office will carry out resource protection, enhancement, and preservation activities as outlined in its planning documents. This is the context used to analyze the potential for the Proposed Action and the No-Action Alternative to contribute to cumulative impacts.

3.3.1 Alternative 1: No-Action

The No-Action Alternative would not result in any direct cumulative impacts.

The No-Action Alternative would preclude the siting of proposed PBO stations on BLM-administered lands in Nevada. Because of the location and extent of BLM administered public land throughout the state, this would substantially limit the effectiveness of the PBO network and reduce the amount of in-depth knowledge of the geology and seismic activity in Nevada. This loss of information would be an indirect cumulative impact of the No-Action Alternative, but would not constitute a major cumulative effect.

3.3.2 Alternative 2: Install PBO Network

Through application of the siting criteria, the PBO network would have no discernible individual or cumulative impact on any critical element or resource described in Section 3.1. As described in Section 3.2, none of the

proposed PBO sites would have an individually high or significant impact on any resource. Potential impacts at each site would be avoided or would be low in severity and minor in extent, based on the exclusionary and evaluative siting criteria (Appendix B) and the small area of environmental disturbance at any individual site.

Ground disturbance during construction of the PBO sites would cause very small, temporary direct impacts to land uses, soils, and vegetation. Cumulative, long-term disturbance and displacement impacts from the PBO structures would be negligible in extent. As shown in Table 3-3, installation of all 36 proposed PBO stations on Nevada BLM administered public land, including the installation of one data relay site on BLM administered public land, would temporarily disturb a maximum of about 14,387 m^2 or 1.4 ha (154,856 ft^2 or 3.6 ac). Final installation would result in about 2,590 m^2 or 0.26 ha (28,000 ft^2 or 0.64 ac) of long-term disturbance. These short- and long-term disturbance impacts are not substantive enough to contribute measurably to any cumulative impact on the 19 million ha (48 million ac) of BLM administered public land in Nevada.

As described in Chapter 1, the full PBO network in Nevada (on BLM and other lands) would consist of 44 PBO stations, of which 38 would be fenced. Short-term and long-term disturbance impacts from installing and operating the entire PBO network in Nevada would have a *de minimus* contribution to cumulative impacts related to ground disturbance, including soil erosion, vegetation/general habitat disturbance or displacement, and displacement of other land uses. The total short-term disturbance area from construction of the statewide network is estimated to be 16,599 m^2 or 1.7 ha (178,664 ft^2 or 4 ac) as shown in Table 3-1. Long-term disturbance or displacement would encompass 2,813 m^2 or 0.28 ha (30,411 ft^2 or 0.70 ac).

The PBO statewide network would have minor temporary or negligible long-term, localized impacts on transportation and access, air quality, noise, recreation, and visual resources. These minor impacts would be widely dispersed across the state and would not contribute measurably to any cumulative impacts.

Table 3-1 Short- and Long-Term Cumulative Disturbance from Statewide PBO Network

Facility Type	Quantity	Short-Term Construction Impact	Long-Term Disturbance Impact
Short drill-braced PBO stations	10	740 m^2 or 0.07 ha (8,000 ft^2 or 0.18 ac)	2 m^2 or 0.0002 ha (19 ft^2 or 0.0004 ac)
Deep drill-braced PBO stations	32	15,840 m^2 or 1.6 ha (170,464 ft^2 or 3.9 ac)	5 m^2 or 0.0005 ha (61 ft^2 or 0.001 ac)
Additional impact from fencing PBO sites[a]	38	—	2,805 m^2 or 0.28 ha (30,327 ft^2 or 0.70 ac)
Relay/repeater site with CDMA modem	2	19 m^2 or 0.002 ha (200 ft^2 or 0.005 ac)	0.32 m^2 or 0.00003 ha (3 ft^2 or 0.00008 ac)
Additional impact for relay/repeater sites with VSAT	0	—	—
Total estimated disturbance area	**—**	**16,599 m^2 or 1.7 ha (178,664 ft^2 or 4.0 ac)**	**2,813 m^2 or 0.28 ha (30,411 ft^2 or 0.70 ac)**

[a] Additional impact from fencing based on total fenced area at each site (74 m^2 × 37 sites = 2,738 m^2) minus long-term impact area for each PBO site (0.17 m^2)

3.4 Mitigation and Residual Impacts

Mitigation measures are discussed in each resource section for each Field Office. There would be no residual impacts from the Proposed Action.

3.5 Monitoring

As discussed in Section 2.2, the proposed PBO stations would not require operational support other than a maintenance visit to check the condition and functionality of the equipment. The maintenance activities would occur only once every one to five years, depending on the life of the equipment batteries. Unless the equipment is vandalized, no other site support would be required. No additional resource monitoring needs have been identified for the Proposed Action.

3.6 Summary of Environmental Impacts

The expected impacts of constructing, operating, and maintaining the PBO network are described for each Field Office in this chapter. The impact descriptions for each resource focus on the impacts of new construction proposed on BLM-administered lands in Nevada. Measures to avoid or

minimize impacts are noted for each affected resource. Operational and maintenance impacts would be negligible as described for each Field Office. As discussed in Section 3.3, Cumulative Impacts, the Proposed Action would not contribute to cumulative impacts with other past, present, and reasonably foreseeable actions.

Construction Impacts. The area disturbed by installation of a short drill-braced monument would be about 74 m^2 or 0.007 ha (800 ft^2 or 0.02 ac) while the area disturbed by installation of a deep drill-braced monument would be about 263 m^2 or 0.03 ha (2,827 ft^2 or 0.06 ac). An additional staging area of 15 × 15 m (50 × 50 ft) might be needed. For either a short or deep drill-braced monument, a trench about 8 cm (3 in) wide and 6 to 9 m (20 to 30 ft) long would contain wiring that connected the equipment mast to the CGPS monument; this trench would be within the area of disturbance noted above. The trench would be dug by hand to a depth of about 30 cm (12 in).

Sites would be accessed by established roadways, and no new access roads would be created. The final approach to a site would be on foot, by all-terrain or four-wheel-drive vehicle, or on horseback.

For some of the PBO stations, a data relay/repeater site would be necessary to transmit data (see Section 2.2.1). The data relay sites would be accessed in the same manner as the PBO stations. For sites that can be collocated with existing telecommunication facilities, there would be no additional construction impact because the PBO equipment would be mounted on existing equipment masts. For sites that cannot be collocated, the construction disturbance area would be about 9 m^2 or 0.0009 ha (100 ft^2 or 0.002 ac).

The areas for the CGPS monument, equipment mast, and trench as well as any data relay sites would be subject to short-term, temporary impacts during the one- to two-day construction period. Following construction, sites would be re-vegetated according to BLM guidelines.

Long-Term Impacts. Long-term impacts would be restricted to the area drilled for installation of the stainless steel legs (five holes, each 5 cm [2 in] in diameter) and the equipment mast (one hole, 46 cm [18 in] in diameter and 30 cm [12 in] deep). These drilled areas would total 103 cm^2 or 0.01 m^2 (16 in^2 or 0.11 ft^2) for the five monument legs and 1,639 cm^2 or 0.16 m^2 (254 in^2 or 1.8 ft^2) for the equipment mast for a total long-term impact of 0.17 m^2 (1.9 ft^2).

For some sites, it would be necessary to fence the PBO stations to protect them from hazards such as grazing livestock. Where it is necessary to fence PBO stations, the fenced area would be 74 m^2 or 0.007 ha (800 ft^2 or 0.02 ac).

For the data relay/repeater sites, the long-term impacts would be restricted to the area drilled for the stainless steel equipment pole foundation. The equipment pole requires one hole that is 46 cm (18 in) in diameter and 30 cm (12 in) deep for a total of 1,639 cm^2 or 0.16 m^2 (254 in^2 or 1.8 ft^2) of impact. No VSAT data relay sites were necessary for the proposed PBO stations on BLM administered public land. Appendix C provides equipment lists for construction and installation of short and deep drill-braced monuments.

Operational and Maintenance Impacts. Once constructed, the PBO stations and data relay sites would not require operational support other than an annual maintenance visit to check equipment condition and functionality. In many cases, maintenance activities could occur only once every two to five years, depending on the life of the equipment batteries (see Section 2.2 for more information).

Summary of Temporary and Long-Term Disturbance Area. Table 3-2 summarizes the temporary disturbance areas and long-term impact areas for each type of monument and data relay/repeater stations.

A total of 36 PBO stations would be installed on Nevada BLM administered public land, including one data relay sites. Table 3-3 presents the total amount of potential temporary and long-term disturbance for each BLM Field Office region, and for all BLM administered public land in Nevada.

Table 3-2 shows the construction disturbance for short drill-braced monuments, deep drill-braced monuments, and data relay sites Thirty-five sites would have to be fenced. Table 3-3 shows the impacts by BLM Field Office, including the data relay site and fences.

The total temporary surface disturbance from construction on Nevada BLM administered public land would be about 14,387 m^r or 1.4 ha (154,856 ftr or 3.6 ac). Final installation would result in about 2,590 mr or 0.26 ha (28,000 ftr or 0.64 ac) of long-term disturbance.

Table3-2 Area of Potential Disturbance for PBO Station Sites

Facility Type	Short Drill-Braced Monument	Deep Drill-Braced Monument
Temporary Construction Impact		
PBO station site[a]	74 m^2 or 0.007 ha (800 ft^2 or 0.02 ac)	263 m^2 or 0.03 ha (2827 ft^2 or 0.06 ac)
Relay/repeater site[b] (not collocated)	9 m^2 or 0.0009 ha (100 ft^2 or 0.002ac)	9 m^2 or 0.0009 ha (100 ft^2 or 0.002ac)
Long-Term Impact		
PBO station	0.17 m^2 (1.9 ft^2)	0.17 m^2 (1.9 ft^2)
Fenced PBO station (when necessary)	74 m^2 (800 ft^2 or 0.02 ac)	74 m^2 (800 ft^2 or 0.02 ac)
Relay/repeater site with CDMA modem	0.16 m^2 (1.8 ft^2)	0.16 m^2 (1.8 ft^2)
Relay/repeater site with CDMA and VSAT	0.33 m^2 (3.5 ft^2)	0.33 m^2 (3.5 ft^2)

[a] An additional staging area of 15 × 15 m (50 × 50 ft) might be required for some deep drill-braced monuments. The staging area would be located within the 1 ac culturally cleared area.

[b] Relay/repeater stations are separate from PBO stations and are the same size regardless of whether they are relaying data from a short or deep drill-braced PBO station. The construction disturbance area is the same regardless of whether a CDMA modem or a VSAT connection is installed at the relay/repeater station.

Table 3-3 Total Area of Potential Temporary and Long-term Disturbance on Nevada BLM administered public land

BLM Field Office	Number of Facilities	Disturbance Type in square meters (square feet) [acres]			
		Construction Disturbance	Construction Access Impacts[1]	Long-Term Disturbance	Long-Term Disturbance of Fenced Sites[2]
Battle Mountain	6	2,970 (31,962) [0.73]	2,142 (22,800) [0.53]	1.02 (11.4) [0.0003]	444 (4,800) [0.11]
Carson City	13	4,760 (51,243) [1.18]	2,708 (28,800) [0.67]	2.21 (24.7) [0.0005]	1,036 (11,200) [0.26]
Elko	1	569 (6,127) [0.14]	189 (2,016) [0.05]	0.34 (3.8) [0.00008]	74 (800) [0.02]
Ely	7	2,623 (28,235) [0.65]	1,129 (12,024) [0.28]	1.19 (13.3) [0.0003]	518 (5,600) [0.13]
Winnemucca	7	3,465 (37,289) [0.86]	662 (7,044) [0.16]	1.19 (13.3) [0.0003]	518 (5,600) [0.13]
Total Disturbance from PBO Stations		**14,322 (154,156) [3.54]**	**6,830 (72,684) [1.69]**	**5.78 (64.6) [0.001]**	**—**
Additional Impact from Relay / Repeater Stations with CDMA	2	18.6 (200) [0.005]	**—**	0.32 (3.6) [0.00008]	**—**
Additional Impact from Relay / Repeater Stations with VSAT	0	**—**	**—**	**—**	**—**
Total Potential Impact		**14,387 (154,856) [3.55]**	**6,830 (72,684) [1.69]**	**6.3 (70.1) [0.002]**	**2,590 (28,000) [0.64]**

[1] Construction access is calculated using the distance of off-road travel to the site multiplied by a 12-ft width for the equipment to travel.

[2] Additional impact from fencing based on total fenced area at each site (74 m^2 × 33 sites) minus long-term impact area for each PBO site (0.17m^2)

3.7 Construction Provision Summary

Each Field Office has provided stipulations that must be followed during construction. These provisions have been incorporated into the appropriate resource sections in the EA. In order to provide an easy-to-find reference, they have been provided here in summary.

3.7.1 Battle Mountain

3.7.1.1 Fencing

Six PBO stations, including the CGPS radome and equipment mast, will be fenced. The fencing would consist of Bureau of Land Management (BLM) four-strand standard fence, which consists of three strands of barbed wire spaced at forty-two inches (42”), thirty inches (30”), and twenty-two inches (22”), from ground level with one smooth wire located sixteen inches (16”) from ground level. Steel “T” posts that are dark green in color with white tips would be used for construction of the fence. Spacing would be sixteen feet six inches (16’ 6”) between “T” posts. A wire stay would be placed on the fence wire midway between steel “T” posts.

3.7.1.2 Equipment Painting

The PBO station components, including fencing, will be painted a nonreflective brown color. The solar panel and GPS radome cannot be painted.

3.7.1.3 Cultural Resources

Any cultural or paleontological resource (historic or prehistoric site or object) or Native American human remains, funerary items, sacred objects, or objects of cultural patrimony discovered by the permit holder,[5] or any persons working on their behalf, during the course of activities on federal land shall be immediately reported to the Authorized Officer by telephone with written confirmation. The permit holder shall suspend all operations in the immediate area of such discovery and protect it until an evaluation of the discovery can be made by the Authorized Officer.

For cultural resources other than Native American human remains, funerary items, sacred objects, or objects of cultural patrimony, this evaluation will determine the significance of the discovery and what mitigation measures are necessary to allow activities to proceed. The Holder is responsible for the cost of evaluation and mitigation. Any decision on treatment and/or mitigation will be made by the Authorized Officer after consulting with the

[5] Holder or Permit Holder refers to UNAVCO. UNAVCO will hold the Right-of-Way grant authorized by the BLM Battle Mountain Field Office.

permit holder. Operations may resume only upon written authorization to proceed from the Authorized Officer.

3.7.1.4 Hazardous Materials and Solid Waste

All design, material, and construction, operation, maintenance, and termination practices shall be in accordance with safe and proven engineering practices.

Holder shall limit excavation to areas of construction. All waste material resulting from construction or use of the site by the Holder shall be removed from the site and disposed of promptly at an appropriate waste disposal site. “Waste” means all discarded matter including, but not limited to, human waste, trash, garbage, refuse, oil drums, petroleum products, ashes, and equipment.

The Holder(s) shall comply with all applicable federal laws and regulations existing or hereafter enacted or promulgated. In any event, the Holder(s) shall comply with the Toxic Substances Control Act of 1976, as amended (15 U.S.C. 2601, et seq.) with regard to any toxic substances that are used, generated by, or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR, Part 702-799 and especially, provisions on the polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess on the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation and Liability Act of 1980, Section 102b. A copy of any report required or requested by any federal agency or state government as a result of a reportable release or spill of any toxic substances shall be furnished to the Authorized Officer concurrent with the filing of the reports to the involved federal agency or state government.

3.7.1.5 Right-of-Way and Surveying

The Holder shall construct, operate, and maintain the facilities, improvements, and structures within this right-of-way in strict conformity with the information contained in the Application that was approved and made part of the grant. Any relocation, additional construction, or use that is not in accord with the Application or the terms and conditions of the grant shall not be initiated without prior written approval of the Authorized Officer. A copy of the complete right-of-way grant, including all stipulations, attachments, and approved plans of development, shall be made available to the Authorized Officer on the right-of-way area during construction.

Noncompliance with the above will be grounds for immediate temporary suspension of activities if it constitutes a threat to public health and safety of the environment.

The Holder shall protect all survey monuments found within the right-of-way. Survey monuments include, but are not limited to, General Land Office and Bureau of Land Management (BLM) cadastral survey corners, reference corners, witness points, U.S. coastal and geodetic benchmarks and triangulation stations, military control monuments, and recognizable civil (both public and private) survey monuments. In the event of obliteration or disturbance of any of the above, the Holder shall immediately report the incident, in writing, to the Authorized Officer and the respective installing authority if known. Where General Land Office or BLM right-of-way monuments or references are obliterated during operations, the Holder shall secure the services of a registered land surveyor or a Bureau cadastral surveyor to restore the disturbed monuments and references using surveying procedures found in the *Manual of Surveying Instructions for the Survey of the Public Lands in the United States*, latest edition. The Holder shall record such survey in the appropriate county and send a copy to the Authorized Officer. If the Bureau cadastral surveyors or other federal surveyors are used to restore the disturbed survey monument, the Holder shall be responsible for the survey cost.

The Holder shall conduct all activities associated with the construction, operation, and termination of the right-of-way within the authorized limits of the right-of-way.

Prior to termination of the right-of-way, the Holder shall contact the Authorized Officer to arrange a pre-termination conference. This conference will be held to review the termination provisions of the grant.

3.7.1.6 General Operation

The Authorized Officer may suspend or terminate in whole or in part any notice to proceed which has been issues when, in his judgment, unforeseen conditions arise which result in the approved terms and conditions being inadequate to protect the public health and safety or to protect the environment.

All design, material, and construction, operation, maintenance, and termination practices shall be in accordance with safe and proven engineering practices.

During the period of May 1 through October 1 of each year, Holder should consider using spark arresters on vehicles and equipment in the project area, due to the potential for fire ignition from the project-related activities. This includes emissions of hot carbon particles from diesel-powered equipment, improperly equipped or poorly operating exhaust systems on gas-powered vehicles and direct contact of wildland fuels with catalytic converters.

Individuals, groups, businesses, or corporations found responsible for ignition of a wildfire may be held liable for the cost associated with suppression of that fire.

When requested by the Authorized Officer, the Holder, or any person working on their behalf, shall make his equipment already at the site with operators temporarily available for fighting fires in the vicinity of the project. Payment for such services will be made at rates determined by the Authorized Officer.

3.7.2 Carson City

3.7.2.1 Fencing

All proposed PBO station sites in Carson City Field Office will be fenced. The fencing will be a large-gauge steel mesh panel fence. The fence will be painted brown to blend into the landscape.

3.7.2.2 Migratory Birds

No construction timing limitations pertaining to migratory birds will be applied to the installation of PBO stations in the Carson City Field Office jurisdiction.

3.7.2.3 Cultural Resources

The presence of a cultural resource monitor at four specific sites during initial surface disturbing activities would mitigate the potential for damage to cultural resources.

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3.7.3 Elko

3.7.3.1 Fencing

The proposed PBO station site, including the CGPS radome and equipment mast, will be fenced using T-post and steel cable fence. The steel cable will be either 3/8 in or 1/2 in in diameter and placed at 16 in, 32 in, and 48 in above the ground. The fence will be painted with nonreflective brown paint.

3.7.3.2 Access Roads

No construction equipment will be used for road maintenance. Gravel or driveway rock will be used to fill in three or four washouts. The washouts will be filled by hand from the back of a pickup truck.

3.7.3.3 Biological Resources

Construction will be completed before April 15 or after July 31 to comply with Executive Order 13186, Responsibilities of Federal Agencies To Protect Migratory Birds.

Any areas where vegetation is removed during construction will be seeded with native perennial grass seed mixes suitable for the area.

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3.7.4 Ely

3.7.4.1 Fencing

All seven proposed PBO station sites, including the CGPS radome and equipment mast, will be fenced using T-post and steel cable fence. The steel cable will be either 3/8 in or 1/2 in in diameter and placed at 16 in, 32 in, and 48 in above the ground. The fence will be painted with nonreflective brown paint.

3.7.4.2 Equipment Painting

The PBO station components, including fencing, will be painted a nonreflective brown color. The solar panel and GPS radome cannot be painted.

3.7.4.3 Migratory Birds

Construction of PBO stations will not occur between May 1 and July 15 in the Ely Field Office jurisdiction.

3.7.4.4 Signing

BLM will provide signs to be posted at the PBO stations indicating that the PBO stations are for scientific research and are not associated with the Southern Nevada Water Association Water Pipeline or the proposed coal-fired power plant.

3.7.4.5 Access Roads

“Road” means two track, 4-wheel, and existing constructed roads.

Roads shall be left in at least the same condition as at initial use.

Maintenance on roads shall NOT be performed without written approval by the BLM.

When driving cross-country, the route selected shall result in the least amount of vegetation impacted which may require a longer driving route.

No activities shall be performed during periods when the soil is too wet to adequately support equipment or vehicles. If such equipment or vehicles creates ruts in excess of six inches deep, the soil shall be deemed too wet to adequately support the equipment or vehicles.

3.7.4.6 Vegetation

The Holder[6] shall prevent any activities which may cause erosion. Where erosion has resulted, the Holder shall re-vegetate and re-habilitate the location.

The Holder shall remove only the minimum amount of vegetation necessary for all activities.

The Holder shall be responsible for weed control on disturbed areas within the limits of the right-of-way. The Holder is responsible for consultation with the Authorized Officer and/or local authorities for acceptable weed control methods. Chemical weed control products shall not be used within 400 feet of any standing or flowing water body or drainage, or slope on which the water can flow.

Before entering the work or maintenance area on federal land, and on leaving a noxious weed area, all construction equipment and ground working tools are required to have their undercarriage and extremities washed to remove noxious weed seeds which could be on the equipment. Washing shall not take place within 150 feet of any body of water or ditch line. Washing shall not take place where the water can run downslope.

[6] Holder refers to UNAVCO. UNAVCO will hold the Right-of-Way Grant authorized by BLM Ely Field Office.

3.7.5 Winnemucca

The federal regulations in 43 CFR 2800 are considered to be included in these stipulations.

3.7.5.1 Fencing

The boundary of the authorized site(s) shall be fenced. Fencing shall be as follows:

- The fence shall be at least 5 ft high. The fence shall be constructed of welded wire and a single top wire of 24-gauge wire. There shall be a 4-in gap from the top of the welded wire fence to the single top wire.
- Vertical corners and support posts shall be designed to prevent birds from perching.
- There shall be an 8-in open area from the ground to the bottom of the constructed fence.
- The fence shall be painted brown.

3.7.5.2 Equipment Painting

All structures that can be painted, shall be painted a dark brown color. Structures that cannot be painted shall be constructed of nonreflective materials or surfaces shall be roughened so that they are non-reflective.

3.7.5.3 Access Roads

“Road” means two-track, four-wheel, and existing constructed roads.

Roads shall be left in no less serviceable condition as at initial use.

Maintenance on roads shall *not* be performed without written approval by the BLM.

Access for all sites will be on existing roads, except for specified sites P083 (Tobin Range) and P096 (Little Valley) as specified and evaluated in Section 3.2.5.2 Transportation Access.

When driving cross-country, the route selected shall result in the least amount of vegetation impacted which may require a longer driving route.

3.7.5.4 Construction Site and Access Roads

No activities shall be performed during periods when the soil is too wet to adequately support equipment or vehicles. If such equipment or vehicles creates ruts in excess of six inches deep, the soil shall be deemed too wet to adequately support the equipment or vehicles and the activity shall cease.

3.7.5.5 Borrow Areas

No borrow areas shall be permitted on federal land without a written application for the proposal and NEPA review.

3.7.5.6 Staging Areas

Staging areas shall be located within the authorized footprint.

3.7.5.7 Vegetation

The Holder[7] shall prevent any activities which may cause erosion. Where erosion has resulted, the Holder shall revegetate and rehabilitate the location. The Holder is responsible for consultation with the Authorized Officer for an acceptable proposal.

The Holder shall remove only the minimum amount of vegetation necessary for all activities.

The Holder shall be responsible for weed control on disturbed areas within the limits of the right-of-way. When utilizing pesticides for weed control, holder must ensure that no pesticides are applied to open water, or allow drift to enter open water. Buffer zones around open water are 25 feet for mechanized equipment (i.e. pickup mounted spray unit) and 10 feet for an individual (i.e. backpack spayer).

The Holder is required to consult with the authorized officer and/or local authorities for acceptable weed control methods prior to treatment in order to obtain a list of herbicides approved for use on public land. A Pesticide Use Proposal (PUP) must be approved prior to application of any pesticides on public land. Holder must also submit copies of any pesticide use records for treatment performed on public land.

[7] Holder refers to UNAVCO. UNAVCO will hold the Right-of-Way Grant and Temporary Use Permits authorized by the BLM Winnemucca Field Office.

Holder must also submit copies of any pesticide use records for treatment performed on public land, and must only use herbicides approved for use on public land.

Before entering federal land, and before leaving a noxious weed area, all construction equipment and ground-working tools are required to have their undercarriage and extremities washed to remove noxious weed seeds which could be on the equipment. Washing shall not take place within 150 feet of any body of water or ditch line. Washing shall not take place where the water can run downslope.

Use of pesticides shall be used only in accordance with their registered uses and within limitations imposed by the Secretary of the Interior. Prior to the use of pesticides, the Holder shall obtain from the Authorized Officer written approval of a plan showing the type and quantity of material to be used, pest(s) to be controlled, method of application, location of storage and disposal of containers, and any other information deemed necessary by the Authorized Officer. Emergency use of pesticides shall be approved in writing by the Authorized Officer prior to such use.

3.7.5.8 Biological Resources

Construction will be completed before April 15 or after July 31 to comply with Executive Order 13186, Responsibilities of Federal Agencies To Protect Migratory Birds.

Any areas where vegetation is removed during construction will be seeded with native perennial grass seed mixes suitable for the area.

The Holder, or any person working on his behalf, on Federal land, from March 1st to August 15th of each year, upon discovery of an active western burrowing owl nest (Speotyto cunicularia) shall suspend all operations within a 100-foot radius of the site until juvenile fledging (permanent leaving of the nest by juvenile owl). The site was cleared for owls during construction of the PBO station but during maintenance visits, UNAVCO staff will maintain a 100-radius if owl is active burrow is encountered. See adjacent pictures of owl.

3.7.5.9 Cultural Resources

Pursuant to 43 CFR 10.4(g), the Holder of this authorization must notify the Authorized Officer, by telephone with written confirmation, immediately upon the discovery of human remains, funerary objects, sacred objects, or objects of cultural patrimony (as defined at 43 CFR 10.2). Further, pursuant to 43 CFR 10.4(c) and (d), the Holder must stop activities in the vicinity of the discovery and protect it for 30 days or until notified to proceed by the Authorized Officer.

Any cultural (historic or prehistoric site or object) and/or paleontological resource (historic or prehistoric site or object) discovered by the Holder, or any person working on his behalf, on public or federal land, shall be immediately reported to the Authorized Officer. The Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant values. The Holder will be responsible for the cost of evaluation, and any decision as to proper mitigation measures will be made by the Authorized Officer after consulting with the Holder.

3.7.5.10 Hazardous Materials

The Holder is prohibited from discharging oil or other pollutants on federal land or into or upon waters on federal land. The Holder shall give immediate notice of any such discharge to the Authorized Officer and such other federal and state officials as are required by law to be given such notice.

In the event of the release of any hazardous substance, the Holder shall immediately notify the Winnemucca Field Office hazardous materials specialist. The Holder shall be responsible for all work and costs associated with removing the substance from federal lands to the approval of the Authorized Officer. An approved hazardous materials spill kit shall be available in all vehicles and equipment.

The Holder shall comply with all applicable federal, state, and local laws and regulations, existing or hereafter enacted or promulgated, with regard to any hazardous material, as defined in this paragraph, that will be used, produced, transported, or stored on or within the right-of-way or any of the right-of-way facilities, or used in the construction, operation, maintenance, or termination of the right-of-way or any of its facilities. “Hazardous material” means any

substance, pollutant, or contaminant that is listed as hazardous under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended, 42 U.S.C. 9601 et seq., and its regulations. The definition of hazardous substances under CERCLA includes any "hazardous waste" as defined in the Resource Conservation and Recovery Act (RCRA) of 1976, as amended, 42 U.S.C. 6901 et seq., and its regulations. The term "hazardous materials" also includes any nuclear or byproduct material as defined by the Atomic Energy Act of 1954, as amended, 42 U.S.C. 2011 et seq. The term does *not* include petroleum, including crude oil or any fraction thereof that is not otherwise specifically listed or designated as a hazardous substance under CERCLA section 101(14), 42 U.S.C. 9601(14), nor does the term include natural gas.

The Holder shall notify the Authorized Officer if there is a significant variance from the approved action with respect to hazardous materials.

The Holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act of 1976, 42 U.S.C. 6901 et seq.) on the right-of-way (unless the release or threatened release is wholly unrelated to the right-of-way Holder's activity on the right-of-way). This agreement applies without regard to whether a release is caused by the Holder, its agent, or unrelated third parties.

All design, material, and construction, operation, maintenance, and termination practices shall be in accordance with safe and proven engineering practices.

Holder shall limit excavation to areas of construction. All waste material resulting from construction or use of the site by the Holder shall be removed from the site and disposed of promptly at an appropriate waste disposal site. "Waste" means all discarded matter including, but not limited to, human waste, trash, garbage, refuse, oil drums, petroleum products, ashes, and equipment.

The right-of-way shall be maintained in a sanitary condition at all times; waste materials shall be disposed of promptly at an appropriate waste disposal site. "Waste" means all discarded matter including, but not limited to: human waste, trash, animal carcasses, garbage, vegetation, refuse, oil drums, petroleum products, ashes, and equipment.

All excess materials resulting from activities shall be removed from federal land.

The Holder shall comply with the Toxic Substances Control Act of 1976, as amended (15 U.S.C. 2601, et seq.) with regard to any toxic substances that are used, generated by or stored on the R/W or on facilities authorized under this R/W grant. (See 40 CFR, Part 702-799, and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117, shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, Section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the Authorized Officer concurrent with the filing of the reports to the involved Federal agency or State government.

3.7.5.11 Right-of-Way and Surveying

Prior to relinquishment or abandonment of any portion of the right-of-way authorized by this grant and future amendment(s), the Holder shall contact the Authorized Officer to arrange a joint inspection of the right-of-way. This inspection will be held to agree to an acceptable termination (and rehabilitation) plan. This plan shall include, but is not limited to, removal of facilities, drainage structures, or surface material, recontouring, topsoiling, or seeding. The Authorized Officer must approve the plan in writing prior to the Holder's commencement of any termination activities. The Holder shall be responsible for the cost and implementation of the approved rehabilitation plan.

The Holder shall protect all survey monuments found within the right-of-way. Survey monuments include, but are not limited to, General Land Office and Bureau of Land Management (BLM) cadastral survey corners, reference corners, witness points, U.S. coastal and geodetic benchmarks and triangulation stations, military control monuments, and recognizable civil (both public and private) survey monuments. In the event of obliteration or disturbance of any of the above, the Holder shall immediately report the incident, in writing, to the Authorized Officer and the respective installing authority if known. Where General Land Office or BLM right-of-way monuments or references are obliterated during operations, the Holder shall secure the services of a registered land surveyor or a Bureau cadastral surveyor to restore the disturbed monuments and references using surveying procedures found in the *Manual of Surveying Instructions for the Survey of*

the Public Lands in the United States, latest edition. The Holder shall record such survey in the appropriate county and send a copy to the Authorized Officer. If the Bureau cadastral surveyors or other federal surveyors are used to restore the disturbed survey monument, the Holder shall be responsible for the survey cost.

In accordance with federal regulations in 43 CFR 2807.21:

(a) With BLM's approval, you may assign, in whole or in part, any right or interest in a grant.

(b) In order to assign a grant, the proposed assignee must file an application and satisfy the same procedures and standards as for a new grant, including paying processing fees (see §2804 of this part).

(c) The assignment application must also include:

(1) Documentation that the assignor agrees to the assignment; and

(2) A signed statement that the proposed assignee agrees to comply with and be bound by the terms and conditions of the grant that is being assigned and all applicable laws and regulations.

(d) BLM will not recognize an assignment until it approves it in writing. BLM will approve the assignment if doing so is in the public interest. BLM may modify the grant or add bonding and other requirements, including additional terms and conditions, to the grant when approving the assignment. BLM may decrease rents if the new Holder qualifies for an exemption (see §2806.14 of this part), or waiver or reduction (see §2806.15 of this part) and the previous Holder qualified for an exemption or waiver or reduction and the new Holder does not. If BLM approves the assignment, the benefits and liabilities of the grant apply to the new grant holder.

(e) The processing time and conditions described at §2805.15 (c) of this part apply to assignment applications.

The Holder shall construct, operate, and maintain the facilities, improvements, and structures within this right-of-way in strict conformity with the information contained in the Application that was approved and made part of the grant. A copy of the complete right-of-way grant, including all stipulations, attachments, and approved plans of development, shall be made available to the operators on the right-of-way area during construction. Noncompliance with the above will be grounds for immediate temporary suspension of activities if it constitutes a threat to public health and safety of the environment.

3.7.5.12 Fire Prevention/Season

The following will be observed when on the ground activities are implemented during declared fire season(s):

a. All vehicles used on the project will carry the following:

A shovel suitable for wildland firefighting

An operable backpack pump of five gallon capacity

Some sort of communications device (cell phone, satellite phone, two-way radio, etc.) that can be used for wildfire notification

b. All vehicles and auxiliary machinery will be equipped with properly functioning and baffled exhaust systems.

c. No metal cutting or welding will be done in any vegetated area. All torch use will be done on cleared soil. Vegetation will be cleared to a minimum of 15 feet surrounding any work.

d. No smoking will be permitted in vegetated areas. Smoking will be inside vehicles or an area cleared of vegetation

e. No flammable waste will be burned in vegetated areas

If there is a need to dispose of burnable waste material it will be done on a cleared site and **only after notification of Central Nevada Interagency Dispatch Center** at (775) 623-1555.

f. If any fire occurs at or near the site, Central Nevada Interagency Dispatch Center will be immediately notified at (775) 623-3444 (24-hour fire emergency phone).

g. There will be no site work done during periods of “Red Flag Warnings” due to the extreme fire danger predicted by local weather and vegetation conditions, or during periods of National Preparedness Level 5, which indicates an extraordinarily high level of fire suppression resources committed to on-going fires and the expectation of new fires starting. This information can be obtained daily from Central Nevada Interagency Dispatch Center at (775) 623-1555.

h. Any wildfire resulting from operations by the holder will be considered as a trespass fire and will be investigated. Possible legal actions could be billing for the suppression of the fire by the Bureau of Land Management, and the resulting rehabilitation costs.

3.7.5.13 General Operation

The Holder shall comply with Title VI of the Civil Rights Act of 1964 (42 U.S.C. 2000d et seq.) and the regulations of the Secretary of Interior issued pursuant thereto.

The Holder shall inform the Authorized Officer within 48 hours of any accidents on federal lands that require reporting to the Department of Transportation as required by 49 CFR Part 195.

Construction and maintenance vehicles and equipment operating on federal land shall have a fire extinguisher, shovel, and axe or Pulaski at all times when operation is occurring.

The Holder shall comply with all applicable federal, state, and local laws and regulations, existing or hereafter enacted or promulgated. The Holder is responsible for obtaining and determining all required permits.

The Holder agrees to indemnify, defend, and hold the United States harmless from any costs, damages, claims, causes of action, penalties, fines, liabilities, and judgments of any kind or nature arising from the past, present, and future acts or omissions of the United States, or its employees, agents, contractors, or lessees, or any third-party, arising out of, or in connection with, the Holder's use, occupancy, or operations on the right-of-way. This indemnification and hold harmless agreement includes, but is not limited to, acts and omissions of the United States and its employees, agents, contractors, or lessees, or any third party, arising out of or in connection with the use and right-of-way which has already resulted or does hereafter result in: (1) violations of federal, state, and local laws and regulations that are now, or may in the future become, applicable to the real property; (2) judgments, claims, or demands of any kind assessed against the United States; (3) costs, expenses, or damages of any kind incurred by the United States; (4) other releases or threatened releases of solid or hazardous waste(s) and/or hazardous substances(s), as defined by federal or state environmental laws, off, on, into, or under land, property, and other interests of the United States; (5) other activities by which solids or hazardous substances or wastes, as defined by federal and state environmental laws are generated, released, stored, used, or otherwise disposed on the right-of-way, and any cleanup response, remedial action, or other actions related in any manner to said solid or hazardous substances or wastes; or (6) natural resource damages as defined by federal and state law. This covenant shall be construed as running with the right-of-way and may be enforced by the United States in a court of competent jurisdiction.

The Authorized Officer may suspend or terminate in whole or in part any notice to proceed which has been issues when, in his judgment, unforeseen conditions arise which result in the approved terms and conditions being inadequate to protect the public health and safety or to protect the environment.

All design, material, and construction, operation, maintenance, and termination practices shall be in accordance with safe and proven engineering practices.

During the period of May 1 through October 1 of each year, Holder should consider using spark arresters on vehicles and equipment in the project area, due to the potential for fire ignition from the project-related activities. This includes emissions of hot carbon particles from diesel-powered equipment, improperly equipped or poorly operating exhaust systems on gas-powered vehicles and direct contact of wildland fuels with catalytic converters.

Individuals, groups, businesses, or corporations found responsible for ignition of a wildfire may be held liable for the cost associated with suppression of that fire.

When requested by the Authorized Officer, the Holder, or any person working on their behalf, shall make his equipment already at the site with operators temporarily available for fighting fires in the vicinity of the project. Payment for such services will be made at rates determined by the Authorized Officer.

This grant is subject to all valid rights existing on the effective date of this grant.

In case of change of address, the Holder shall immediately notify the Winnemucca Field Office, Bureau of Land Management (BLM) Authorized Officer.

The Holder shall conduct all activities associated with the construction, maintenance, operation, and termination of the right-of-way within the authorized limits of the right-of-way.

Future modifications, construction of improvements, or major maintenance operations involving disturbance of the land, shall not occur within or outside of the authorized right-of-way until plans for such actions have been submitted and approved in writing by the Authorized Officer. Any proposals involving new surface disturbance shall require a cultural inventory and may require completion of an environmental assessment and an amendment of the right-of-way.

The Holder shall comply with applicable Federal, State, county, and municipal laws, regulations, Best Management Practices and standards for public health and safety, environmental protection, locating, construction, operation, dust and maintenance in exercising the rights granted by this right-of-way.

The Holder is responsible for notification of existing and future right-of-way Holders on federal land should activities potentially effect their authorized use(s).

The right-of-way shall be relinquished to the United States within 180 days if it is no longer needed for the use it was authorized to serve.

Should the Holder fail to perform these and future stipulation requirements, within 60 days of receipt of the Authorized Officer's written notification to do so, BLM may perform the requirements at the Holder's expense, including the administrative costs to BLM to effect any such action.

The Authorized Officer reserves the right to enter upon the right-of-way and inspect all facilities to assure compliance with the conditions of this grant.

If the Holder violates any of the terms and conditions of this grant and future amendment(s), the Authorized Officer, after giving written notice, may declare the Grant and future Amendment(s) terminated.

The effective date of this R/W grant is the date of execution by the Authorized Officer.

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Chapter 4: CONSULTATION AND COORDINATION

4.1 Persons, Groups or Agencies Consulted

4.1.1 BLM Consultation

The following persons were consulted and served as a point of contact in preparing this environmental assessment:

- Dennis Samuleson, Nevada BLM State Office, Realty Specialist
- Chuck Lane, Battle Mountain Field Office, Realty Specialist
- JoAnn Hufnagle, Carson City Field Office, Realty Specialist
- Cathie Jenson, Elko Field Office, Realty Specialist
- Ann Perkins, Ely Field Office, Realty Specialist
- Lynn Trost, Winnemucca Field Office, Realty Specialist
- Scott Powers, BLM Washington Office, Lands and Realty Division

Since the start of the PBO project, UNAVCO has conducted informal meetings with the BLM, U.S. Forest Service, U.S. Fish and Wildlife Service, and National Park Service to introduce the project and determine the most appropriate and efficient methods of NEPA compliance. The BLM Washington (DC) Office initiated activities to coordinate and consult with each of the BLM state offices to determine an agency-wide strategy for NEPA compliance and issuance of right-of-way grant authorizations for PBO stations. The BLM Washington Office issued Information Bulletin No. 2005-015 addressing this strategy on November 3, 2004 (Appendix D).

Consultation and coordination with Nevada BLM State and Field Office staff will continue throughout the review of the statewide EA.

4.1.2 Native American Consultation

Each Field Office consulted with or notified the appropriate tribes. The consultation/notification process and results are discussed by Field Office.

4.1.2.1 Battle Mountain

The proposed PBO stations lie within the traditional territory of the Western Shoshone and possibly the Northern Paiute. Considering the description, location, and purpose of the project itself, it is unlikely that this activity will adversely impact any Native American religious site, religious practice or

ceremony, or any other traditional-use site. The Proposed Action does not appear to have the ability to compromise the integrity of any traditional/spiritual/cultural or ceremonial-use area. This action will not limit or prevent access to any unknown (to BLM) or known traditional-use or ceremonial sites currently in use. The Proposed Action describes only very limited ground disturbance, and finished stations are very unobtrusive. Archaeological surveys were completed for the chosen PBO station sites (Austin, Campbell Creek, Railroad Pass, Twin Spring Hills, Devon Peak, and Slaven Canyon). No archaeological resources were encountered.

Given the information above, BLM has determined that formal Native American consultation is unnecessary at this time. Although though the possibility of disturbing Native American grave sites in the project area is extremely low, this section includes procedures for responding to the discovery of human remains. Native American Graves Protection and Repatriation Act, section (3)(d)(1), it states that the discovering individual must notify the land manager in writing of such a discovery. If the discovery occurs in connection with an authorized use, the activity, which caused the discovery, is to cease and the materials are to be protected until the land manager can respond to the situation.

4.1.2.2 Carson City

The Fallon Paiute Shoshone Tribe, Washoe Tribe of Nevada and California, Reno Sparks Indian Colony, Yerington Paiute Tribe, Pyramind Lake Paiute Tribe, Walker River Paiute Tribe, and Yomba Shoshone Tribe were notified of the Proposed Action on November 4, 2005. All information related to the Native American religious concerns is considered confidential and is on file at the BLM Carson City Field Office. Tribes were sent notification of the proposed PBO stations in the Carson City District on November 4, 2005.

4.1.2.3 Elko

The proposed PBO station P007 will not conflict with tribal interests. The data relay station, site P087R, is near the Dann Band Traditional Territory. However, considering the description, location, and purpose of the project itself, it is unlikely that this activity will adversely impact any Native American religious site, religious practice or ceremony, or any other traditional use site. The Proposed Action does not appear to have the ability to compromise the integrity of any traditional/spiritual/cultural or ceremonial-use area. This action will not limit or prevent access to any unknown (to BLM) or known traditional-use or ceremonial sites currently in use. The Proposed Action describes only very limited ground disturbance, and finished

stations are very unobtrusive. Archaeological surveys were completed for the chosen PBO station sites. No archaeological resources were encountered.

Given the information above, BLM has determined that formal Native American consultation is unnecessary at this time. Although though the possibility of disturbing Native American grave sites in the project area is extremely low, this section includes procedures for responding to the discovery of human remains. Under the Native American Graves Protection and Repatriation Act, section (3)(d)(1), it states that the discovering individual must notify the land manager in writing of such a discovery. If the discovery occurs in connection with an authorized use, the activity, which caused the discovery, is to cease and the materials are to be protected until the land manager can respond to the situation

4.1.2.4 Ely

The Ely Field Office held a tribal coordination meeting on November 17, 2005. The Proposed Action was presented to the tribal members attending (Ely Shoshone). No comments were made or concerns raised by the tribal members.

4.1.2.5 Winnemucca

All proposed PBO station sites on Winnemucca Field Office land were prescreened using Geographic Information Systems (GIS). The potential PBO station locations were overlaid onto maps of resources such as sage grouse leks, known archeological sites, and areas important to the tribes. If a potential site was located in an important resource area, the site was either moved to a non-sensitive resource area or eliminated if it could not be relocated. Consultation with the tribes was deemed not necessary for the seven PBO station locations because the sites were relocated to areas that would not have resource concerns for the tribes or were eliminated if the sites could not be relocated.

4.1.3 Public/Agency Consultation

The BLM staff determined and provided opportunities for known interested parties to participate. No issues have been identified to date. Public and agency consultation will continue through the submittal of the EA to the Nevada State Clearinghouse. Additionally, some Field Offices may post notice of the EA on their public website/web posting boards.

4.2 List of Preparers

This Environmental Assessment was prepared by:

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Chapter 5: REFERENCES AND ACRONYMS

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Internet Resources

http://www.nv.blm.gov/

http://www.blm.gov/flpma/organic.htm

5.2 List of Acronyms Used in this EA

ATV	All-Terrain Vehicle
BAPC	Bureau of Air Pollution Control
BLM	Bureau of Land Management
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CDMA	Code-Division Multiple Access (a digital cellular technology)
CGPS	Continuous Global Positioning System
CO	Carbon monoxide
dB	Decibel
dB(A)	A-weighted decibel
DNA	Determination of NEPA Adequacy
EA	Environmental Assessment
EPA	Environmental Protection Agency
et seq.	and subsequent sections
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FLPMA	Federal Land Policy and Management Act
GIS	Geographic Information Systems
GPS	Global Positioning System
HA	Herd Area
HMA	Herd Management Area
L_{dn}	Day-night average sound levels
MFP	Management Framework Plan
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act

NO_x	Nitrogen oxide
NO_2	Nitrogen dioxide
NPS	National Park Service
NSF	National Science Foundation
NRHP	National Register of Historic Places
OHV	Off-Highway Vehicle
O_3	Ozone
PB	Lead
PBO	Plate Boundary Observatory
$PM_{2.5}$	Particulate matter under 2.5 microns in diameter
PM_{10}	Particulate matter under 10 microns in diameter
POD	Plan of Development
RFAS	Reasonably foreseeable action scenario
RMP	Resource Management Plan
SO_2	Sulfur dioxide
UNAVCO	University NAVSTAR Consortium
USFS	United States Forest Service
USFWS	United States Fish & Wildlife Service
VSAT	Very small aperture terminal (satellite telephone)

APPENDICES

APPENDIX A: Land Conformance by Field Office

APPENDIX B: CGPS Station Siting Criteria

APPENDIX C: Equipment List and CGPS Station Specifications

APPENDIX D: BLM Information Bulletin 2005-015

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APPENDIX A: Land Use Conformance by Field Office

The following table contains the resource management/land use plans that were reviewed for land use conformance for the Nevada Field Offices.

Resource Management Plan	Date of Plan	Applicable Field Office
Draft and Final Shoshone-Eureka Resource Management Plan (RMP)[1] and Environmental Impact Statement (EIS)[2]; Shoshone-Eureka Resource Area Record of Decision (ROD)[3]	1983, 1984, 1986	Battle Mountain
Shoshone-Eureka Resource Management Plan Amendment Final EIS and ROD	1987	
Central Nevada Communication Sites Proposed (and Final) Plan Amendment and Environmental Assessment (EA)[4]	1996	Battle Mountain/Carson City
Central Nevada Communication Sites Modified Final Plan Amendment	1998	Battle Mountain/Carson City
Tonopah RMP and ROD	1997	Battle Mountain
Carson City Field Office Consolidated Resource Management Plan	2001	Carson City
ElkoResource Management Plan ROD	1987	Elko
Wells Resource Management Plan ROD	1985	Elko
Eagan Resource Management Plan	February 1987	Ely
Schell Management Framework Plan	March 1983	Ely
Sonoma-Gerlach Management Plan	July 9, 1982	Winnemucca
Paradise-Denio Management Framework Plan	July 9, 1982	Winnemucca

[1] Resource Management Plan

[2] Environmental Impact Statement

[3] Record of Decision

[4] Environmental Assessment

[5] Winnemucca and Ely Field Offices indicated conformance with previous resource management plans and amendments.

The resource management plans for the BLM Field Offices, including goals of the resource management plans, as well as specific avoidance or minimization guidelines that pertain to the Proposed Action, were considered during siting of the proposed PBO stations. Note: that there are goals and management information in the land use plans that the UNAVCO proposal neither affects nor is affected by.

APPENDIX B: CGPS Station Siting Criteria

Siting Process

Overview

Individual PBO stations would be selected using a systematic siting process to maximize operational capabilities and minimize adverse environmental impacts. It is assumed that all potential environmental impacts would be minimized by siting to avoid sensitive areas. The best location is selected by progressively eliminating from consideration infeasible and less desirable sites. Through the use of siting criteria, the network's technical constraints and capabilities and environmental constraints are considered in identifying locations for the PBO stations. The siting process for the PBO network consists of three distinct phases: network definition, regional screening, and individual site evaluation.

During network definition, the specific needs of the network users and the operational capabilities and constraints of the equipment would be used to define an integrated network of monitoring locations. This phase would determine the geographic extent of the network and identify nominal locations for CGPS receivers. Nominal locations are defined as geographic coordinates at which the performance of the network would theoretically be optimum. However, surrounding each of these nominal locations, there is a zone of tolerance where the operational needs of the PBO network would still be met. Because it would be acceptable to place a PBO station anywhere in this zone, sensitive environmental resources can be avoided by moving the PBO station to a location in the zone where the sensitive resources do not exist. During this first phase of the siting process, an overall environmental review would be conducted to avoid obvious significant environmental impacts and to recommend any adjustments in the network.

The second phase of the siting process is the regional screening phase. Optimal geographic network locations would be narrowed to potential area-wide sites through the use of exclusionary and evaluative siting criteria, which are described in more detail in the next section. During this phase, the applicant would notify and consult with the appropriate federal, state, and local agencies to identify their concerns and incorporate their suggestions into the siting process. The agencies would review the tolerance zone to help identify where resources may exist that would be subject to exclusionary or

evaluative siting criteria. After area-wide potential sites are screened, specific sites are selected for individual site investigation.

The third phase of the siting process would be the individual site evaluation, for which field investigations would be conducted to determine the relative suitability of the candidate sites and to select a preferred site for the PBO station. This phase would involve analyzing the candidate sites for site-specific environmental impacts and operational suitability, using exclusionary and evaluative criteria. It is during this phase that biological and cultural surveys would be conducted if necessary.

Siting Criteria

Site screening and evaluation would be conducted by applying a set of siting criteria that reflects the full range of siting considerations for the project. The siting criteria for the PBO project are designed to achieve the following primary project goals:

- Optimize the operational capability of the PBO network.
- Identify sites that are suitable for development as PBO network locations.
- Optimize right-of-way/easement acquisition conditions.
- Minimize conflicts with public use for areas in which PBO stations are deployed.
- Minimize adverse environmental impacts.

To achieve each goal, exclusionary and evaluative siting criteria have been identified. Exclusionary criteria are operation goals that must be met or resources that must not be disturbed when siting the PBO stations. Evaluative criteria, on the other hand, are not absolute but are used to make tradeoffs between or among conflicting goals and resources.

Exclusionary Siting Criteria

Except for operational exclusions used in the network development phase, exclusionary criteria would be applied to eliminate highly sensitive areas (i.e., wetlands, wilderness areas, etc.) from consideration. This would be accomplished using published maps and data. Some exclusionary criteria would require site-specific data and field analysis, including cultural resources and threatened and endangered species. Therefore, exclusionary criteria would be used throughout the siting process.

Table 1 lists exclusionary criteria to be used in siting PBO stations. Other exclusions may be added as a result of operational testing or pursuant to consultation with government officials and agencies. Once applied, exclusionary criteria would eliminate from further consideration areas that do not meet the standards of acceptable performance.

Table 1 Exclusionary Siting Criteria

Resource	Criteria
Operational Suitability	• Exclude areas where sources of radio frequency interference, such as power transmission lines, unacceptably impair system performance.
Construction Suitability	• Exclude areas with known past slope instability or potential technical risk of instability. • Exclude areas prone to collapse.
Geology	• Exclude areas where site installation would conflict with mineral rights, oil and gas leases, and known mineral deposits.
Biology	• Where siting is allowed within areas managed for wildlife protection (e.g., refuges, preserves or sanctuaries), exclude sensitive areas such as known wildlife movement corridors, breeding or nesting areas, etc., as determined by managing agency(s).
Land Use	• Exclude areas protected by the Wild and Scenic Rivers Act. • Exclude prime and unique farmlands, as identified by the Natural Resource Conservation Service (formerly U.S. Soil Conservation Service). • Exclude national and state parks and designated recreation areas. • Exclude natural landmarks designated through the National Natural Landmarks Program. • Exclude wilderness areas designated under the Wilderness Act.
Visual Resources	• Exclude areas within the defined corridor of a designated scenic highway.
Safety	• Exclude areas that encroach into Federal Aviation Administration (FAA) airport standoff distances. • Exclude areas within 259 meters (850 feet) of quarries where blasting occurs.

Evaluative Siting Criteria

Most siting criteria are evaluative rather than exclusionary. Evaluative criteria are used to compare area-wide sites within the tolerance zone and choose the individual sites that best meet the operational criteria of the PBO network while avoiding or minimizing environmental impacts to the greatest extent possible. Evaluative criteria would be applied to locations not excluded with exclusionary criteria. Evaluative criteria may be used to further eliminate

locations if there are sufficient alternative siting opportunities or used to compare siting locations. The evaluative criteria to be used in siting PBO stations are listed in Table 2. The criteria would be used to avoid conditions having the potential for high environmental impact. In cases where avoidance of conditions with potential for sizeable impacts would not be feasible, field investigations would be conducted to determine the extent of actual environmental impacts.

The importance of each evaluative criterion would vary from site to site as resources and their relative importance vary from site to site. Depending on the resources present, one criteria may be given precedence over another criteria in siting the PBO station to decrease overall impacts or impacts to a sensitive resource. Concerns of government agencies and local officials could also affect the importance of a criterion at any given PBO station.

Table 2 Evaluative Siting Criteria

Resource	Criteria
General Site Requirements	• Sky view down to ~10° above the horizon. • Sites on or near bedrock. • Sites near AC power and internet, or sites where solar panels and data communications links (radio, VSAT, wireless, phone) can be installed. • For sites located on municipal, county, state and federal land, obtain permit and NEPA compliance for a UNAVCO, Inc.-supported, continuously operating GPS station with a high stability monument, 12-channel geodetic quality receiver and antenna, and unrestricted access to the site. • For sites on private property, lease agreements and easements would be negotiated on a case-by-case basis.
Operational Suitability	• Avoid areas where the required signal strength could not be achieved. • Avoid areas developed, zoned, or planned for industrial uses where potential sources of radio frequency interference exist. • Avoid areas where power line corona effects could interfere with signal propagation. • Avoid sites in proximity to metal towers or buildings that would interfere with system performance. • Avoid sites where measured ground conductivity is below that required for adequate antenna performance.
Construction Suitability	• Avoid areas requiring new access roads for PBO station installation or maintenance.
Geology and Soils	• Avoid areas highly prone to erosion. • Avoid areas with known paleontological resources.
Water Resources	• Avoid areas within surface water body setbacks. • Avoid floodplains where PBO stations cannot be constructed at least two feet above the 100-year flood level.

Biology	• Avoid habitats of threatened and endangered species, as defined by the U.S. Fish and Wildlife Service (USFWS). • Avoid critical wildlife habitats, as identified by the USFWS and state wildlife agencies. • Avoid habitats of state and locally listed rare, threatened, endangered, or sensitive species, as identified by state and local wildlife agencies. • Avoid critical avian habitats, as defined by the USFWS and state wildlife agencies. • Avoid rare native plant communities, as defined by state and local agencies. • Avoid habitats of high value to plant and animal populations, as determined by state fish and wildlife agencies. • Avoid wetlands and riparian areas that have been designated by the U.S. Army Corps of Engineers or identified by USFWS or state agencies in accordance with state laws and regulations, and where construction of proposed PBO stations would affect the properties critical to designation and viability.
Noise	• Avoid sensitive land uses located near PBO stations where day-night average noise level (L_{dn}) would exceed 75 dBA.
Land Use	• Avoid areas where existing residential development, or existing residential zoning in combination with development plans, indicate that there may be visual, noise, or safety concerns or other conflicts with residential uses. • Avoid designated coastal zones where construction of PBO stations would adversely affect coastal resources or where the objectives of applicable coastal plans and programs could not be satisfied. • Avoid locally designated preservation and conservation areas where the purposes of such areas or the objectives of their designation would be adversely affected.
Cultural Resources	• Avoid known cultural resources listed or determined to be eligible for listing on the National Register of Historic Places. • Avoid resources and locations determined to have importance to the free expression or practice of the Native American religion, in accordance with the American Indian Religious Freedom Act. • Avoid areas that contain cultural resources of value at the state or local level but which are not considered eligible for National Register listing (e.g., cultural properties listed on state of local registers or identified by state historians, state archaeologists, or other appropriate state and local agency personnel).
Safety	• Maintain a standoff distance between the base of the monument or strainmeter and inhabited structures.

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APPENDIX C: Equipment List and CGPS Station Specifications

CGPS Short, Drill-Braced Monument Construction and Installation Detail

Requirements for Short, Drill-Braced Monument construction and installation include the following:

- Construction crew: 2–3 UNAVCO employees.
- Heavy Equipment: 1 four-wheel drive pickup truck with 4-m (14-ft) trailer.
- Construction performance period: 1–2 days, depending on material to be drilled.
- Sanitation support: Miniature portable toilet for environmentally sensitive areas.

TOOLS

Personal Tool Kit

- Digital camera
- Earplugs
- Flashlight
- Gloves
- Handheld GPS
- Hardhat
- Needle nose and regular pliers
- Reflective vest
- Safety glasses
- Safety shoes
- Set of flat and Phillips screwdrivers
- Set of nut drivers
- Sharpie/pencil/chalk
- Small and large adjustable wrenches
- Small and large channel pliers
- Small and large diagonal pliers
- Small and large vice grips
- Standard and metric hex wrenches
- Tape measure
- Torpedo level
- Utility blade
- Wire stripping tools

Regional Tool Kit

- Adjustable angle level
- Angle grinder
- Brunton compass and inclinometer
- Cable ties
- Chop saw
- Circular saw
- Crimping tool
- Deburring tool
- Drill
- Drill bits
- Electrical tape
- Extension cords
- Flat and pointed shovel
- Gas can
- Generator
- Large tarp
- Multimeter
- Pickaxe
- Posthole digger
- Rake
- Sawzall
- Shopvac
- Small sledgehammer
- Small torch

- Socket set
- Soldering iron and solder
- Spare batteries for everything
- String/twine
- Surveyor's wheel
- Tripod
- Wire brush

Welding Tool Kit

- Electrode sticks
- Gloves
- Mask
- Pointed hammer
- Welder
- Wire wheel for drill

Antenna/Dome Tool Kit

- (3/16-inch) hex wrench
- (7/32-inch) end wrench
- TR25 × 100 security torx driver
- Air compressor
- Air hose
- Blow-out tool
- Epoxy injector
- Extendable fluted drill bits
- Heavy duty hammer drill

Truck Tool Kit

- Cones
- Fire extinguisher
- Road flares
- Winch accessories

CGPS and Communications Instrumentation

- Trimble NetRS GPS receiver and Choke Ring Antenna
- Cellular or satellite radio modem
- White Plastic Radome to cover GPS Antenna
- Metal Equipment Enclosure (30" × 15" × 24")
- Gel Cell non-spillable batteries
- Solar Panel Array (2–4 panels) 24" × 36"
- 3" × 8' metal pole to secure panels, box and communication antenna onto located 15-20 feet from GPS monument

CGPS Deep, Drill-Braced Monuments
Construction and Installation Detail

Requirements for Deep, Drill-Braced Monument construction and installation include the following:

- Construction crew: 3 drillers, 1-2 UNAVCO overseers.
- Heavy Equipment: 2-3 four-wheel drive pickup trucks with 4-m (14 ft) trailer, possibly one 18-wheel semi-truck to deliver drill rig.
- Construction performance period: 1-2 days, depending on material to be drilled.
- Sanitation support: Miniature portable toilet for environmentally sensitive areas.

EQUIPMENT

- DHD Drilling Rig capable of drilling the holes specified in section (3) of the specification.
- Air-Compressor capable of adequately clearing the holes. This may or may not be built into the drill rig (some rigs have inadequate air-delivery systems).
- Grout Mixer and pump.
- Heavy Duty Welder.
- Trench Digging Machine.

TOOLS

Regional Tool Kit

- Adjustable angle level
- Angle grinder
- Brunton compass and inclinometer
- Cable ties
- Chop saw with cut-off blade
- Spare cut-off blades
- Circular saw
- Crimping tool
- Deburring tool
- Hand Drill
- Drill bits
- Electrical tape
- Flat and pointed shovel
- Gas can and gas
- Generator and extension cords
- Multi-meter
- Pickaxe
- Posthole digger
- Rake
- Sawzall
- Small sledgehammer
- Small torch/butane lighter
- Socket set
- Soldering iron and solder
- String/twine
- Tripod
- Wire brush

Personal Tool Kit

- Digital camera
- Earplugs
- Flashlight
- Gloves
- Handheld GPS
- Hardhat
- Needle nose and regular pliers
- Safety glasses
- Steel-toed shoes
- Set of flat and Phillips screwdrivers
- Sharpie/pencil/chalk
- Small and large adjustable wrenches
- Small and large channel pliers
- Small and large diagonal pliers

- Small and large vice grips
- Standard and metric hex wrenches
- Tape measure
- Torpedo level
- Utility blade
- Wire stripping tools

Welding Tool Kit

- Electrode sticks
- Gloves
- Mask
- Flux hammer
- Welder
- Wire wheel for drill

Antenna/Dome Tool Kit

- 3/16-inch Allen wrench
- 7/32-inch end wrench
- R25 × 100 security torx driver

DDBM Specific Tools

- 100 foot tape measure
- Alignment tool
- Bucket
- Bucket lids – 4 each
- Dust masks
- Large aluminum pipe wrenches – 3 each
- Large vice grips – 10 each
- Rags
- PVC measuring tube

CGPS and Communications Instrumentation

- Trimble NetRS GPS receiver and Choke Ring Antenna
- Cellular or satellite radio modem
- White Plastic Radome to cover GPS Antenna
- Metal Equipment Enclosure (30" × 15" × 24")
- Gel Cell non-spillable batteries
- Solar Panel Array (2-4 panels) 24" × 36"
- 3" × 8' metal pole to secure panels, box and communication antenna onto located 15-20 feet from GPS monument

MATERIALS

Common Supplies

- Orange marking paint – 2 cans
- Anti-seize compound – 1 tube
- Cold galvanizing spray – 1 can
- Primer – 1 can
- Paint – 1 can

DDBM Specific Supplies

- Stainless steel pipe, threaded, 1.25-inch, schedule 80, 20 foot lengths – 10 each
- Pipe couplings, 1.25-inch, small diameter, schedule 80 – 5 each
- PVC pipe, 2.5-inch belled-end, schedule 40, 20 foot lengths – 5 each
- Insulation, 0.75-inch thick, 6 foot lengths – 13 each
- Duct tape – 8 rolls
- Rebar, 0.5-inch, 20 foot lengths – 10 each
- Rebar tie-off wire – 1 roll
- Gussets – 4 each
- Adapter Block - 1
- Spay adhesive – 3 cans
- Wooden stakes – 1 bundle
- Cement, Sand and Water for grout

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APPENDIX D: BLM Information Bulletin 2005-015

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UNITED STATES DEPARTMENT OF THE INTERIOR

BUREAU OF LAND MANAGEMENT

WASHINGTON, D.C. 20240

November 3, 2004

In Reply Refer To:

2800 (350) P

EMS TRANSMISSION 11/04/2004

Information Bulletin No. 2005-015

To: **All Field Officials**

From: **Group Manager, Lands and Realty Division**

Subject: **Strategy for Issuing Right-of-Way Authorizations for "Earthscope" Facilities**

Program Area: Rights-of-Way

Background Information: Earthscope is a National Science Foundation (NSF) funded project that will systematically survey the geological structure of the North American continent and the processes that shape the American landscape. Earthscope will provide a foundation for fundamental and applied research that will contribute to the mitigation of risks from geological hazards, the development of natural resources and the public's understanding of the dynamic earth.

There are two proponents of Earthscope, UNAVCO (PBO) and IRIS (USArray), who are non-profit, incorporated entities whose purpose and action is University research supported financially by the NSF grant. PBO and USArray will be filing applications with various BLM Field Offices to

permit their proposed right-of-way facilities on public land. The USArray sites would operate for 18 months and then be removed and the site restored. The PBO facilities will operate for about 20 years. Development and success of the Earthscope Project in large part hinges on the proponent's ability to permit and install their facilities according to a well defined schedule. The proponents are committed to providing the BLM with as much lead time as possible on a state-by-state basis.

The imprint on the ground for each of the facilities is small with a maximum disturbance of about 30' by 30'. Access to each of the facilities will be by existing road or off-road, where applicable. No new road construction is anticipated for any of the facilities.

For further information about PBO and USArray, see the following web site and contact information:

UNAVCO (PBO) - http://pbo.unavco.org/~kyleb/blm.htm

Contact: Kyle Bohnenstiehl, (303) 381-7559

IRIS (USArray) - Contact: Robert Busby, (508) 801-7628

Over the past year, the BLM has considered several alternatives to permit about 250 Earthscope facilities on BLM managed public lands across the west. Our objectives in considering various alternatives have been to minimize the workload impacts to the field, ensure compliance with NEPA and accommodate the Earthscope schedule to install the facilities.

We have determined that a short-term right-of-way for the USArray facilities and a long-term right-of-way for the PBO facilities is the appropriate tool to permit these facilities. A determination has also been made that right-of-way rental for each of the rights-of-ways granted should be waived based on the public benefits associated with this project. However, you may collect cost recovery and monitoring fees to process the applications, as applicable.

As previously stated, we have pursued various strategies in an effort to streamline the permitting process and have had extensive discussions with the proponents, State Right-of-Way Program Leads and State NEPA coordinators. Based on these discussions, the following process is recommended for processing the right-of-way applications associated with the Earthscope Project:

Step 1 – Briefing to State Right-of-Way Program Leads

An approximate schedule for PBO and USArray was provided to all State Right-Of-Way Program Leads on April 16, 2004. Pursuant to that schedule, the proponent's representatives will brief BLM State Right-of-Way Program Leads to coordinate their schedule for that state and to get Field Office contact names. The proponent will provide preliminary maps of their proposed site locations, review schedules and NEPA compliance issues, and coordinate a statewide strategy suitable to each individual state. The statewide strategy should be based on the number of sites proposed, ability to mitigate or minimize potential resource conflicts, NEPA compliance, and workload conflicts.

Prior to the initial field contact and pre-application meeting, the proponent will assemble as much GIS data as is necessary and available and perform a preliminary screening for obvious administrative, resource or physical constraints. The GIS data that may be utilized in this screening exercise includes the following:

- **Buffers and tolerances of Earthscope facilities**
- **Roads from DOQs (Digital Ortho quads)**
- **NLCS/ Special management areas**
- **BLM land use plan boundaries**
- **Management prescriptions**
- **Hydrography**
- **Township/Range/Sections**
- **Administrative sites – BLM must provide**
- **24,000 DRGs – Digital Raster Graphics or scanned in topos**
- **MTP data**
- **Snow-tel sites (NRCS)**

Step 2 – Field Office Briefings – Pre-Application Meeting

Proponent will meet with Field Office contacts and present site information to look at potential conflicts and suggested alternative site locations and discuss other Field Office requirements. Proponent shall provide detailed maps showing proposed sites, siting criteria and siting tolerances – proponent has varying degrees of latitude for each site and can adjust proposed locations to avoid conflicts. BLM staff should provide local knowledge about proposed site locations and make recommendations to relocate sites, if necessary. The proponent will also provide detailed information concerning construction methods and facility requirements.

Step 3 – Field Reconnaissance of Potential Sites

Proponent's staff will locate sites on the ground that meets siting criteria (BLM staff should accompany if available). Orange stakes will be placed at the site indicating the specific location of the facilities. Proponent will prepare a report for each site.

Step 4 **–** SF-299 Submittal

Proponent will prepare and submit a SF-299 to individual Field Offices for all of the proposed sites within the boundaries of that administrative unit (this could be for one or more sites). The Field Office will make a cost recovery category determination to process the right-of-way applications. This determination should consider the level of NEPA documentation required (discussed in the following section). The proponent will also provide a contractor to survey for cultural and/or T&E resources, if necessary. The proponent will submit their processing and monitoring fees and coordinate the permitting schedule with the individual field units.

Step 5 – Right-of-Way Grant Issuance

Individual Field Offices will issue right-of-way grants accordingly. It is recommended that only one grant per Field Office be issued for all sites within that field unit.

NEPA Compliance

States may elect to do a Category Exclusion (CX) for all of the USArray sites within their boundaries using Departmental Manual 516, Chapter 6, Appendix 5, Section 5.4 E.19 which addresses a right-of-way authorized for 3 years or less. States should also consider applying criteria1.6 from Departmental Manual 515, Chapter 2, Appendix 1 which addresses non-destructive data collection. If CXs will not be used, States are encouraged to prepare a statewide, programmatic Environmental Assessment (EA), if appropriate, that acknowledges the preliminary GIS screening that was done to mitigate potential resource impacts by relocating the site. The scope of the EA should also be based on the minimal surface disturbance associated with each site, the placement of the sites in existing disturbed areas, the number of sites statewide and the ability to completely avoid cultural and T&E resources. If a statewide EA is prepared, it is recommended that each Field Office tier from that document with a Determination of NEPA Adequacy from which to issue a right-of-way grant.

Due to conflicts with existing workloads, funding constraints or a large number of sites, some states may elect to require the proponent to prepare a statewide EA. This is the case in California where PBO proposes to site up to 70 facilities on BLM managed public lands. PBO is beginning the preparation of an EA for California from which the affected Field Offices will tier from to issue their right-of-way grants. The California EA may serve as a template for other states to follow.

Cost Recovery **– As previously discussed, each Field Office may collect cost recovery fees to process the right-of-way application. However, it is recognized that this workload will vary from state to state and that in some instances, you may have a need to require the applicant to reimburse the BLM for actual costs incurred for processing the applications. Obviously, this is a decision that is left up to individual states. If you are considering requiring actual costs from the proponent, please contact Scott Powers (WO-350) at (406) 896-5319. Scott can assist or advise you with the preparation of a statewide Cost Recovery Agreement.**

Cultural Resources **– It is recommended that your State Cultural Resource Program Lead participate in the initial meeting with the proponent in order to determine the Area of Potential Effect (APE) for your state and to discuss consultation with the State Historic Preservation Officer (SHPO), if necessary. When determining the APE, please bear in mind that the proponent may relocate a site based on individual site tolerances to avoid resource conflicts. In the case of cultural resources, the proponent may be able to entirely avoid designated cultural resource districts. As previously stated, the proponent can also provide a cultural resources contractor to survey a proposed location to ensure avoidance of cultural resources, if necessary.**

Threatened and Endangered (T&E) Species **– Conflicts with T&E resources should not be an issue with the siting and permitting of Earthscope facilities. It is strongly advised that your Field Office T&E Biologist participate in the pre-application meetings to identify areas to avoid because of known T&E plants and animals. As with cultural resources, the proponent can relocate their facilities to completely avoid conflicts with T&E plants and animals. The proponent can also provide a biological contractor to survey a proposed site location to ensure avoidance of T&E resources. Therefore, it is highly unlikely that there will be a need to consult with the Fish & Wildlife Service.**

Cumulative Impacts **– In determining the scope of the proposed action and the recommendation to prepare statewide EAs, if warranted, the need to address the cumulative impacts of the proposed action were considered. We believe that we will be in compliance with NEPA if cumulative impacts are discussed in statewide EAs for the following reasons:**

- **Each state network of Earthscope facilities has "independent utility" in that it can operate independent of the remainder of the network while still providing the same geodetic and geophysical information using the same equipment and satellite telecommunications technology regardless of the presence of other state networks;**
- **Potential network-wide impacts will be qualitatively addressed in the cumulative impacts section of each state-wide EA;**
- **Siting of the individual facilities is subject to strict siting criteria specifically designed to avoid impacts to sensitive environmental resources. The EA would describe the tolerances or buffer zones for each of the sites as well as the exclusionary and evaluative siting criteria.**

PBO and USArray are committed to working with BLM to develop state by state strategies that meets the individual requirements and needs for each state. They will provide the level of resources that will make this work for you. When you are approached by their representatives to begin a discussion on a strategy that works for your state, I encourage you to contact Scott Powers (WO-350) at (406) 896-5319 and include him in your up-front discussions or call him if you have any questions.

Signed by:	**Authenticated by:**
Ray Brady	**Barbara J. Brown**
Group Manager	**Policy & Records Group, WO-560**
Lands and Realty	